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VIBRATION RESPONSES OF TEST STRUCTURE NO. 2 DURING THE EDWARDS AIR FORCE BASE PHASE OF THE NATIONAL SONIC BOOM PROGRAM

by

Donald S. Findley, Vera Huckel, and Harvey H. Hubbard

June 1975

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16. Abstract

In order to evaluate reaction of people to sonic booms of varying overpressures and time durations, a series of closely controlled and systematic flight tests/studies were conducted by the USAF in the vicinity of Edwards AFB, CA, from June 3 to June 23, 1966. The NASA measured the dynamic responses of several building structures as a part of these studies. The purpose of this paper is to present in brief summary form the measurements made in a two-story residence structure (Edwards Test Structure No. 2).

The report contains sample acceleration and strain recordings from F-104, B-58, and XB-70 sonic boom exposures, along with tabulations of the maximum acceleration and strain values measured for each one of about 140 flight tests. These data are compared with similar measurements for engine noise exposures of the building during simulated landing approaches and takeoffs of KC-135 aircraft.

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VIBRATION RESPONSES OF TEST STRUCTURE NO. 2
DURING THE EDWARDS AIR FORCE BASE PHASE OF THE
NATIONAL SONIC BOOM PROGRAM

By Donald S. Findley, Vera Huckel, and Harvey H. Hubbard

INTRODUCTION

It is well known that sonic booms can cause buildings to vibrate, and these vibrations may be an important factor in determining subjective reaction. In order to evaluate reaction of people to sonic booms of varying overpressures and time durations, a series of closely controlled and systematic flight test studies were conducted by the USAF in the vicinity of Edwards, California, from June 3 to June 23, 1966. As a part of these studies and in direct support of them, the NASA has measured the dynamic responses of several building structures. The purpose of this paper is to present in brief summary form the measurements made in a two-story residence structure (Edwards test structure No. 2).

Included herein are sample acceleration and strain recordings from F-104, B-58, and XB-70 sonic-boom exposures, along with tabulations of the maximum acceleration and strain values measured for each one of about 140 flight tests. These data are compared with similar measurements for engine noise exposures of the building during simulated landing approaches and takeoffs of KC-135 aircraft.

APPARATUS AND METHODS

Test Conditions

Tests described herein were accomplished in an area near the main base complex of Edwards Air Force Base, California, (See fig. 1.) from June 3 through June 23, 1966. The area has an elevation of about 2,300 feet above sea level, has sparse vegetation, and is essentially flat (See the photograph of fig. 2.).

Flights were made generally from the east (See fig. 1.) in such a way that the sonic boom waves encountered no other obstructions in the vicinity of the test structures. The sketch of figure 3 shows a planview of the structures and a microphone array used to measure the sonic boom and noise exposures.

The bulk of the tests were performed in the mornings to take advantage of the generally calm wind and atmospheric conditions prevailing at that time of day.

Test Aircraft

The four aircraft indicated in figure 4 5 were used during the tests. Aircraft (a) is an F-104 having a length of 54.5 feet and a maximum gross weight of 22,700 pounds. Aircraft (b) is a B-58 having a length of 96.8 feet and a maximum gross weight of 160,000 pounds. Test aircraft (c), an XB-70, is 185 feet long and has a maximum gross weight of 525,000 pounds. Aircraft (d) is a KC-135 having a length of 134.5 feet and a gross weight of 275,500 pounds. All aircraft were maintained and operated by the Air Force. The actual operating conditions for each of these aircraft for the tests reported herein are listed in Tables II through V.

Aircraft Positioning

The supersonic aircraft were for all but one flight on either a 245° or a 233° heading directly over the test area or on a parallel track five miles north of the test area as shown in figure 1. The aircraft were at all times under ground control and were being tracked by radar. Data on the heading, altitude, Mach number, and lateral displacement from the test area as listed in Tables II through V, were obtained from the radar plots. The KC-135 flew on approximately a 40° heading for all flights with altitude varying from 2,500 to 14,300 with reference to mean sea level.

Weather Observations

Rawinsonde soundings were made during the time the flight tests were being carried on each day. They were made from the Edwards weather station, the location of which is indicated in figure 1. Soundings involved measurements of pressure, temperature, humidity, wind velocity, and wind direction every 1,000 feet. Such measurements were taken up to altitudes at least 5,000 feet above flight altitudes.

Surface conditions in the test area were such that temperatures varied from 57° to 97°, and the relative humidity varied from 10 percent to 44 percent. For the bulk of the data included, surface wind velocity was too low to be an important factor.

Test Structures

Two precut residence type test structures of ordinary frame construction were erected by an Air Force contractor in an area that contained about ten other residences as shown in figure 2. Test structure No. 1 was a single-story three-bedroom house while test structure No. 2 was a two-story four-bedroom house, having a floor plan as indicated schematically in figure 4. Both houses were finished inside and out and contained appropriate furnishings. Although both houses were instrumented with microphones, accelerometers, and strain gages, only data from house No. 2 have to date been reduced and are presented herein. The floor plan and instrument location plan for house No. 2 are included in figure 4 for information.

An area outside of the houses was instrumented with microphones as indicated in figure 3. A number of people were stationed in the houses and in the

immediate area outside of the houses for the subjective response part of the tests. Data on the vibration responses of house No. 2 are correlated with sonic boom and noise measurements.

INSTRUMENTATION

Test structure No. 2 was instrumented with eleven accelerometers, seven strain gages to measure vibratory responses, and three full-range and three audio-range microphones to measure inside pressure fluctuations (See fig. 4.). Table I is included to describe in more detail the locations of the above transducers and the quantities measured. In addition, one audio-microphone and six full-range microphones were located outside the test structure to measure the acoustic and shock wave inputs respectively (See fig. 3.).

The six full-range pressure microphones were located in a cruciform array immediately to the north-east of test structure No. 2. Five of the microphones were mounted in reflection boards at ground level with the remaining microphone at the top of a 20-foot mast located at the center of the array (See fig. 3.). All data were recorded on multi-channel magnetic tape recorders. An IRIG time signal was recorded on one channel of each tape recorder for time correlation between the radar plots and all other measurements. Block diagrams of the accelerometer, strain gage, and microphone systems are included in figure 6.

Each full-range microphone system consisted of a specially modified condenser microphone, tuning unit, dc amplifier, magnetic tape recorder, and a direct-write oscillograph for quick visual checks on the data. The systems have a frequency response which is flat within $\pm$ 2 dB from 0.1 to 10,000 Hz and a maximum sound pressure level rating of 150 dB. All microphones were calibrated each day just before the tests with a 124 dB acoustic signal applied at the microphone.

Each audio range microphone system was made up of a microphone, power supply, amplifier, tape recorder, and direct-write oscillograph. The frequency response of each of these systems is flat within $\pm$ 1 dB from about 30 to 10,000 Hz, with a maximum sound pressure level rating of 140 dB.

The accelerometers used were of the servo type and were fastened with wood screws where possible. Molly bolts were used when accelerometers were mounted on gyp board panels. The signal from each accelerometer was conditioned by a control panel before being recorded on magnetic tape. The accelerometers could measure frequencies up to 500 Hz ($\pm$ 5 percent) and accelerations up to a level of 2 "g's". They were calibrated by current insertion immediately before the tests each day.

For each strain gage circuit, a semi-conductor strain gage was used followed by a conditioning network, a strain gage control panel, and a magnetic tape recorder. The strain level range of the systems was up to 400 μ in./in. over frequencies from 0 to 10 K Hz. The systems were calibrated before the tests each day by a voltage balancing method.

RESULTS AND DISCUSSION

Inputs to the Structure

One of the main objectives of the test studies was to evaluate the responses of the structure to sonic boom inputs of varying wave lengths. In order to accomplish this, controlled flight tests were performed using F-104, B-58, and XB-70 aircraft. Sample sonic boom wave forms as measured from these aircraft are illustrated in figure 7. The main differences in the sonic boom signatures from the above three aircraft were in the time durations of the waves. The F-104 aircraft produced a signature having a time duration generally less than 0.1 second. The B-58 signature had a time duration of about 0.2 second, and the XB-70 produced a time duration as long as 0.3 second. The experiments were obtained in such a way that the overpressure Δp was comparable for the various aircraft. The average Δp_o, Δt, and vertical wave angle values are recorded in Tables II through IV along with the associated aircraft flight conditions and building response data.

In addition to the sonic boom inputs a series of flight tests were conducted with the KC-135 airplane in order to simulate both take-off and landing noise conditions. During these latter noise flights similar building response measurements were made for direct comparison with the sonic boom induced responses. The noise level conditions outside of the building are listed in Table V along with the KC-135 aircraft flight conditions and the associated building response data.

Building Vibration Responses

For each data flight, acceleration levels were measured at 11 points in test structure No. 2 and strain levels were measured at 3 points as indicated in the schematic diagram of figure 4 and as described in the remarks of Table I. A quantitative picture of the type of time history records obtained during the sonic boom exposure flights is given by the tracings of sample records in figures 8 and 9.

Figure 8 includes acceleration time history responses from four transducer locations on the building for a B-58 sonic boom exposure (See Mission 27A.). Each of these transient signals last approximately 0.7 second, but they differ widely in their detailed appearance. For instance, the time history illustrated in figure 8a exhibits a nearly single frequency vibration at about 20 cps which is believed to be the first natural frequency of the main floor joists. The traces of figures 8b and 8c represent accelerations of the ceiling joists of the bedroom and of the downstairs wall studs respectively (See fig. 4.). It can be seen that superposed on the main framing frequencies are higher frequencies which happen to be in the audible frequency range. The trace of figure 8d represents the accelerations of the frame of the house as measured on the outside surface at the second story floor line. Here also is a case where audible frequency noise is superposed on a much lower frequency component. This low frequency component of relatively low amplitude is believed to be the racking frequency of the house.

Included in the data of Tables II, III, and IV are peak acceleration values for records such as those of figure 8. The values of the tables represent the three largest instantaneous acceleration peak values for each sonic boom run. The positive values of the table correspond to upward deflections as indicated in figure 8 and represent movements of the structure toward the accelerometer. Likewise negative values indicate downward deflections and movements of the structure away from the accelerometer.

Figure 9 contains tracings of strain time histories recorded during the same flight tests as the acceleration traces of figure 8. Figure 9a represents the strain response of a 7 ft. x 12 ft. plate glass window whereas the trace of figure 9b represents the strain time history of a pane of glass with an area of one square foot in one of the upstairs double hung windows. The large plate glass window had a natural period of about .25 second which is somewhat longer than the period of the B-58 sonic boom wave. The response results are very similar to those obtained in reference 1 for the case where the period of the sonic boom signature is less than the period of the structure. The natural frequency of the small pane of glass is very much higher, and its period is only a fraction of the B-58 wave. The result is characteristic of that obtained in reference 1 for the response of the single degree of freedom system for the case where the period of the N-wave is several times as long as the period of the structure.

For direct comparison with the sonic boom induced response described above, some special experiments were performed to measure similar response data for the case where the building structure is excited by noise from the engines of an aircraft flying overhead. A sample pair of response records are shown for purposes of illustration in figure 10. Figure 10a represents the tracing of a B-58 sonic boom induced building response for Mission No. 75A. The tracing of figure 10b on the other hand represents the same transducer at the same gain setting for the engine noise situation during aircraft flyover. It can be seen in the sonic boom case that high frequency responses are superposed on lower frequency response modes. In the case of the engine noise the low frequency modes are not excited and the high frequencies dominate. It should be noted that the response to the sonic boom is a transient having about 0.5 to 1.0 second time duration whereas the engine noise induced vibrations are detectable for a time interval from 10 to 20 seconds. The dominant noise induced responses occur at about 150 to 200 Hz and are believed to be associated with the vibration of wall panels between the vertical studs. This same frequency is also detectable on the comparable sonic boom induced response records but is of a relatively low amplitude.

This latter result can be illustrated further with the aid of the acceleration response record tracings of figure 11. These time history data are comparable with the record of figure 10(a) and represent three different test runs as indicated in the figure. The top trace was obtained for an F-104, the middle one for a B-58 mission different than for figure 10(a), and the bottom one for the XB-70. Note that all are generally low frequency responses with higher frequencies of relatively lower amplitude superposed. One distinguishing feature of these records is the high amplitude bursts at time intervals corresponding approximately to the rapid compressions of the sonic boom waves of figure 7. In the case of the XB-70 the acceleration response to the bow

wave nearly dies out before the tail wave arrives. Two separate responses can also be observed for the B-58 whereas they are not so obvious for the shorter time duration signature of the F-104.

The peak acceleration amplitudes as determined from traces such as those illustrated in figure 11 are plotted as a function of sonic boom overpressure in figure 12. The acceleration amplitudes are either positive or negative whichever is the largest from acceleration channel 311 of Table II. It should be noted that channel 311 relates to an accelerometer mounted on one of the studs near the center of the dining room east wall. The sonic boom overpressure value is the average of all ground overpressures measured for that particular flight by the microphone array of figure 3 and as listed in Tables II, III, and IV.

Data are shown in figure 12 for the F-104, B-58, and the XB-70 airplanes. The largest number of data points are for the B-58 aircraft, and these are noted to scatter widely for given values of sonic boom overpressure. Corresponding data for the F-104 airplane also exhibit scatter but seem to have generally higher acceleration amplitudes than the B-58 for given overpressure values. The limited data for the XB-70 fall generally within the range of the B-58 data. Although there is a general trend of increased peaked acceleration amplitudes with an increase in sonic boom overpressure this trend is not well defined by the data points. A result such as this suggests that the wall acceleration response may be a function of parameters other than sonic boom overpressure and these are not properly accounted for in the figure.

A plot of peak strain amplitudes (either positive or negative) as a function of overpressure values are plotted in figure 13 for the three different aircraft of the tests. The peak strain values were measured by channel 312 which represents a strain gage located at the quarter point of the diagonal of the large plate glass window in the front of the garage. The sensitive axis of the strain gage was perpendicular to the diagonal line of the window. It can be seen from the figure that a wide range of strain levels were measured for given sonic boom overpressure values. Although generally higher strain values are associated with higher overpressures, the data points do not define a clear trend nor are there differences according to aircraft size.

Inside Acoustic Measurements

For each of the flights for which vibration response data were recorded for the test structures, acoustic measurements were made in some of the rooms of the structure. Sample data records of the inside pressure fluctuations as measured by conventional microphones are shown in figure 14. The top trace was obtained for a B-58 sonic boom exposure of the type for which the response measurements of figure 10a were made. It can be seen that the pressure time history has strong low frequency components with high frequencies superposed in a manner similar to the sample wall acceleration trace of figure 10a.

At the bottom of the figure is shown a tracing of a microphone record of the noise inside of the same room for a KC-135 flyover for which the structure was exposed to engine noise. It can be seen that this record contains essentially no low frequency fluctuations; the high frequencies being dominant.

In this respect the noise record is very similar in nature to the wall vibration response record of figure 10b.

The similarity between the recordings of figures 10 and 14 is not surprising since it is well known that the noise transmitted into a structure is a result of the wall motions of that structure.

CONCLUDING REMARKS

Various acceleration and strain responses of a two-story residence structure were measured for sonic boom exposures from F-104, B-58, and XB-70 airplanes and for engine noises during low altitude flyovers of a KC-135 airplane. The sonic boom induced vibration responses were generally less than one second in duration and contained frequencies associated with both primary and secondary structural components. Wall acceleration amplitudes increased generally as a function of the sonic boom overpressure, and the F-104 seemed to induce the largest amplitudes for a given overpressure. Strains in a large window also increased generally as overpressure increased with no particular trend as a function of airplane size. Considerable variation in peak response amplitudes is noted for the same nominal flight conditions. Engine noise induced vibration responses have durations of 10 to 20 seconds, and the dominant frequencies are those of the secondary structural components. The acoustic pressures inside the rooms of the structure had frequency contents very similar to those of the corresponding wall vibration responses.

REFERENCE

1. Stanford REs. Inst.: Sonic Boom Experiments at Edwards Air Force Base. NSBEO-1-67 (Contract AF 49(638)-1758), NTIS, U.S. Dep. Com., July 28, 1967. (Available from DDC as AD 655 310.)

TABLE I. - IDENTIFICATION, TYPE, LOCATION AND DESCRIPTION OF THE VARIOUS VIBRATION RESPONSE AND PRESSURE TRANSDUCERS FOR WHICH DATA ARE INCLUDED. (ITEM DESIGNATIONS REFER TO FIGURE 4 AND CHANNEL NUMBERS REFER TO TABLES II THROUGH V.)

ITEM	CHANNEL NO.	TYPE	LOCATION	DESCRIPTION
A	301	Accelerometer	Center of Dining Room Floor	Mounted on Concrete Block Sensitive Axis Vertical
B	302	Accelerometer	Under Edge of Counter in Kitchen-Dinette Area	Mounted on Concrete Block Sensitive Axis Vertical
C	303	Accelerometer	Center of Bedroom No. 1 Floor	Mounted on Concrete Block Sensitive Axis Vertical
D	304	Accelerometer	Bedroom No. 1, Center of N. Wall	Mounted on Stud, Sensitive Axis Horizontal
E	305	Accelerometer	Outside N. Wall, N.E. Corner 2nd Story Roof Line	Mounted on Stud Sensitive Axis Horizontal
F	306	Accelerometer	Outside, E. Wall, N.E. Corner 2nd Story Roof Line	Mounted on Stud, Sensitive Axis Horizontal
G	307	Accelerometer	Outside, N. Wall, N.E. Corner 2nd Story Floor Line	Mounted on Stud, Sensitive Axis Horizontal
H	308	Accelerometer	Outside, E. Wall N.E. Corner 2nd Story Floor Line	Mounted on Stud, Sensitive Axis Horizontal
I	309	Accelerometer	Attic Above Center of Bedroom No. 1	Mounted on Ceiling Joist Sensitive Axis Vertical
J	310	Accelerometer	Attic Above Center of Bedroom No. 2	Mounted on Ceiling Joist Sensitive Axis Vertical
K	311	Accelerometer	Dining Room, Center of E. Wall	Mounted on Stud Sensitive Axis Horizontal
L	312	Strain Gage	Quarter Point on Diagonal inside of Large Garage Window	Sensitive Axis Perpendicular to Diagonal Line
M	313	Strain Gage	Bedroom No. 1, on Window in E. Wall (inside surface)	Center of Upper Middle Pane in Lower Sash, Sensitive Axis Vertical
N	401	Audio Mike	In Archway Between Living and Dining Rooms	Shock Suspended, Diaphragm 5 in. Below Arch Center
O	402	Audio Mike	Over Counter in Kitchen Dinette Area	Shock Suspended, Diaphragm 6 ft. Above Floor
P	403	Audio Mike	Center of Bedroom No. 1	Shock Suspended, Diaphragm 6 ft. above Floor
Q	405	Full Range Mike	In Archway Between Living and Dining Room	Shock Suspended, Diaphragm 5 in. Below Arch Center
R	407	Full Range Mike	In Attic Above Center of Bedroom No. 1	Shock Suspended, 3 in. Above Ceiling Joist, Diaphragm up
S	409	Full Range Mike	In Center of Bedroom No. 1	Shock Suspended, Diaphragm 2 in. Below Ceiling, Pointed up
	404 406 408 410 411 412	Full Range Mikes	Outside in Cruciform Array. See Figure 3.	

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Table II

SONIC BOOM INDUCED ACCELERATION AND STRAIN RESPONSES OF TEST STRUCTURE NO. 2 FOR A RANGE OF B-58 FLIGHT CONDITIONS

Date	Mission No.	Altitude msl ft.	Mach No.	Lateral Dist. Naut. mi.	Mag. Hdg. deg.	Reading Point	Peak Amplitude: Accelerometer Channels g's											Peak Amplitude: Strain Gage μ, in./in.		Δp_I lb/ft²			Δp_O Avg. lb/ft²	Δt Avg. sec.	Vert. Wave Angle deg.
							301	302	303	304	305	306	307	308	309	310	311	312	313	405	407	409			
6-6-66	39	31,400	1.25	4.64 N	244.0	1	.020	--	.015		--	--	.011	--	.021	.027	.065	--	--				No Boom	--	--
						2	.020	--	-.015		--	--	.021	--	.025	.036	-.065	--	--						
						3	.025	--	.015		--	--	.025	--	.021	.036	.169	--	--						
	70	43,900	1.60	.55 N	245.0	1	-.076	.015	-.067	.224	-.049		-.051	-.061	-.127	-.205	.407			1.04	1.27	.85	2.00	0.183	48.4
						2	.078	-.085	.076		-.070	-.066	.045	.156	.142	.241	-.434	-26.1	-6.81						
						3	.076	-.	.071	-.182	.065	.055	-.059	-.135	-.144	.165	.456	38.3	--						
	40	31,400	1.48	.20 N	246.0	1	.142	-.130	-.120		-.108	-.176	.091	-.104	-.175	-.286	-.187	-42.2	12.5	1.33	1.76	.79	3.44	.156	51.2
						2	-.124	.130	.120		-.116	.165	-.218	.139	.240	.321	.836	56.5	-9.31						
						3	.137	1.0	-.147	.355	.095	.121	.	-.109	.142	-.250	-.765	-20.1	--						
	71	44,200	1.59	5.00 N	215.0	1	-.111	.085	.092	.474	.119	-.187	-.178	-.156	-.149	-.152	.575	19.2	7.04	1.33	1.08	.66	1.71	.177	52.1
						2	.121	-.115	-.118	-.381	-.206	.176	.212	.152	.106	.165	-.565	-13.3	-5.90						
						3	-.106	.095	.072	-.338	.157	-.193	.187	.156	-.106	.147	-.575	30.3	--						
	41	31,340	1.45	.17 N	246.7	1	-.101	-.120	-.080	.317	-.130	-.193	.089	-.164	-.170	-.321	.608	-37.0	11.1	1.27	1.37	.95	2.50	.152	50.4
						2	.111	.110	.012	-.296	.125	-.149	-.115	-.109	.174	.335	-.619	48.4	-9.08						
						3	-.101	-.100	.088	.376	-.135	.143	.148	-.148	-.132	-.272	.608	-19.9	--						
	72	43,420	1.55	4.85 N	244.5	1	-.081	.070	.071	.372	-.108	-.176	-.136	-.078	-.144	.129	.456	16.1	5.90	.84	1.08	.55	1.99	.171	60.1
						2	.091	-.080	-.076	.250	.135	.187	.115	.139	-.093	-.134	-.380	-15.6	-5.22						
						3	-.096	-.065	-.071	-.305	-.130	-.171	-.127	-.126	.085	.116	.467	23.2	--						
	74	32,440	1.30	.72 S	242.5	1	.121	-.090	-.101	--	.163	-.176	.123	.182	.170	.250	1.55	41.4	25.4	1.48	1.76	1.14	3.16	.193	73.0
						2	-.116	.090	.113	--	-.168	-.154	-.115	-.165	-.182	-.205	1.09	-29.9	-8.63						
						3	.116	-.070	-.113	--	-.157	-.198	-.123	-.165	.208	.250	1.18	38.3	-11.4				--		
	44	43,400	1.57	5.00 N	245.0	1	-.086	.070	.071	.343	-.070	-.066	.144	.113	-.115	-.098	.521	16.1	5.17	.87	.98	.55	1.70	.195	63.1
						2	.086	.090	-.084	-.279	.081	-.066	-.145	.111	.106	.143	-.423	-12.8	-4.54						
						3	-.061	.065	.059	-.182	-.076	-.072	.110	-.122	.102	-.089	.293	27.2	--						
	75	31,840	1.46	0	248.0	1	.162	-.130	-.118	.406	.233	-.198	-.136	-.200	-.246	-.375	.738	-39.3	14.3	1.21	1.57	.69	3.18	.156	56.7
						2	-.162	.130	.122	-.389	.233	.176	-.178	-.209	.306	.420	-.847	49.4	-7.95						
						3	.152	-.160	-.113	.372	.152	-.215	.191	-.209	.191	-.241	.956	-19.9	--						
	42	43,300	1.53	0	245.0	1	.121	.080	.080	.558	-.206	.209	-.272	.248	-.187	-.156	.706	-13.7	6.81	.87	1.08	.55	1.78	.182	--
						2	-.106	-.160	-.105	.558	.265	-.276	.276	-.204	.127	.187	-.586	22.2	-5.45						
						3	-.111	.075	.076	-.372	-.238	-.215	-.204	-.182	.140	.107	-.651	-7.0	--						
	73	31,860	1.43	.25 N	241.0	1	.147	-.135	-.118	.512	.211	-.160	-.170	-.226	-.267	-.384	.815	35.3	9.08	1.15	1.47	.71	3.54	.159	53.2
						2	-.127	.140	.122	-.381	-.309	-.176	.195	.230	-.242	.388	-.586	-39.8	-8.63						
						3	.157	-.120	-.105	.398	.190	-.209	-.182	-.235	.289	-.312	.977	51.5	--						
6-7-66	76 A	31,560	1.48	1.09 S	241.5	1	.098	-.100	-.096	-.38	-.13	-.11	.13	-.15	.22		-.752	-36.3	11.8	1.09	1.62	.78	3.27	.163	59.1
						2	-.088	.160	.12	.31	.12	.11	-.13	.19	.19	-.23	.989	40.9	-7.34						
						3	.103	.091	-.083	.21	-.12	.11	-.13	-.18	.18	.20	-.774	34.5	--						
	45 B	43,660	1.70	4.95 N	244.5	1	.110	-.091	.092	-.31	.081	-.055	-.097	.16	-.088	.22	.419	-14.0	6.23	.80	1.17	.52	2.01	.171	53.1
						2	-.078	.011	-.12	.30	-.065	.066	-.092	-.14	.10	.15	-.430	23.6	-4.00						
						3	.095	.011	.092	.26	-.065	-.044	.088	.14	.093	-.13	.430	16.3	--						

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Table II (Continued)

Date	Mission No.	Altitude msl ft.	Mach No.	Lateral Dist. Naut. mi.	Mag. Hdg. deg.	Reading Point	Peak Amplitude													Δp_I lb/ft^2			Δp_O Avg. lb/ft^2	Δt Avg. sec.	Vert. Wave Angle deg.
							Accelerometer Channels g's											Strain Gage μ, in./in.							
							301	302	303	304	305	306	307	308	309	310	311	312	313	405	407	409			
6-7-66	77 B	31,690	1.51	0.10 S	244.5	1	-.083	-.080	-.075	.26	.060	.055	-.079		-.22	-.29	.494	36.3	11.3	1.03	1.68	.57	2.91	0.156	53.2
						2	.083	.080	-.092	-.34	-.11	-.055	.088	-.075	.20	.31	-.516	-.363	-7.79						
						3	.054		-.098		.054	-.055	.097	.068	-.14	.16	.559	.454	--						
	46 B	43,720	1.65	5.42 N	226.5	1	.11	.070	-.096		.065	.066	-.13	.12	-.097	.16	.441		5.56	.75	1.06	.52	1.63	.171	56.7
						2	.14	-.075	.083	-.34	-.11	-.061	.18	.093	.088	-.12	.318	-.114	-4.00						
						3	-.098	.065	-.075	.29	.081	-.061	-.18	-.13	.088	.13	.484	.163	--						
	48 A	38,700	1.31	5.23 N	245.5	1	.024	-.010	-.0083	.084	-.011	.028	.022	.063	.022	.053	.075	.908	3.34	.75	1.06	.49	No Boom		--
						2	-.024	.010	.0083	-.092	.011	-.011	-.022	-.034	.044	.066	.161	-14.5	-2.22						
						3	.024	.010	-.0083	-.092	-.011	.028	.022	.021	.044	.053	.107	13.6	--						
	79 A	31,600	1.52	.12 N	244.5	1	-.073	-.070	-.063	-.29	.076	.14	.066	.18	-.13	-.18	.537	-41.5	13.3	1.18	1.96	.62	2.48	.169	53.0
						2	11	.075	.088	.19	-.087	-.11	-.053	-.14	.12	.20	.645	58.1	-8.01						
						3	.098	.075	.083	-.25	.059	-.11	.066	-.13	-.14	-.18	-.666	-28.5	--						
	49 A	43,340	1.43	4.65 N	152.5	1	.039			.19	-.065	-.039	026	.038	-.040	.062	.290	18.2	4.45	.80	1.23	.52	1.44	.211	72.8
						2	-.034	-.025	-.025	-.20	.065	-.050	-.022	-.051	.053	.080	-.290	-17.6	-4.45						
						3	.034	-.045	.025	.17	-.054	.039	.026	.042	-.040	.081	.258	36.3	--						
	80 A	31,600	1.53	.25 N	244.5	1	-.098	-.091	.096	.27	-.11	-.094	-.11	.11	-.11	-.213	.484	32.7	12.2	1.03	1.68	.57	2.72	.156	51.6
						2	.11	.091	.092	-.34	.098	-.077	-.088	-.16	.19	.29	-.537	-37.4	-6.67						
						3	-.098	-.091	-.088	.29	-.076	.077	.097	-.14	.13	.16	.645	36.3	--						
	50 A	43,340	1.43	5.00 N	245.5	1	.039	.035	-.038	.19	.027	.028	-.088	.034	.088	.080	.301	9.99	3.34	.63	.78	.49	1.01	.196	72.8
						2	-.029	-.030	.042	-.19	.027	-.028	.088	.034	.053	.080	-.236	-10.4	3.34						
						3	.049	.040	-.033	.17	.027	.028	.075	.034	.066	.066	.290	14.5	-4.45						
	81 A	31,400	1.49	.06 S	245.0	1	.034	-.025	.029	-.16	-.043	.044	.031	-.042	.062	.102	.215	27.2	6.67	.92	1.56	.52	1.95	.150	53.6
						2	.039	.025	-.021	-.13	.049	-.055	-.035	.042	.079	.102	-.268	-36.5	-5.56						
						3	.054	.030	.021	.10	-.054	-.309	.035	.051	.071	-.089	-.161	36.3	--						
6-8-66	43 A	42,380	1.62	5.24 N	245.0	1	.13	.080	.076	-.30	.17	.16	-.062	-.040	.072	-.089	.325	11.6	6.59	.89	1.33	.60	1.70	.175	58.7
						2	.10	-.110	-.080	.23	-.20	-.20	.040	-.044	-.085	.12	-.347	-16.1	-4.36						
						3	.11	.015	.051	-.24	.098	.14	-.040	.053	.076	.080	.358	21.1	2.04						
	75 A	31,200	1.44	.23 N	244.5	1	.18	-.160	.13	.52	.18	.20	-.19	-.30	-.31	-.38	.824	27.6	13.2	1.21	1.86	.63	3.17	.156	50.0
						2	.15	.150	-.14		-.21	-.23	.17	-.29	.30	.47	1.08	-43.6	-7.63						
						3	.18	.170	-.15	.56	-.14	-.25	-.21	.26	-.27	-.39	.867	32.0	3.86						
	42 A	43,260	1.67	4.85 N	246.7	1	.14	.100	.11	.35	-.098	-.080	.20	.18	-.14	-.21	-.510	10.9	6.36	.82	--	.52	2.06	.179	57.9
						2	-.13	-.135	-.13	-.36	-.098	.075	-.19	-.15	.17	.31	.520	-13.8	-5.23						
						3	.12	.110	.11	-.37	.092	.069	-.18	.16	.10	.18	-.499	16.7	1.82						
	73 A	31,200	1.50	.10 N	245.0	1	-.096	.075	-.084	.27	-.103	-.115	-.115	-.16	-.17	-.22	.520	-37.9	11.1	1.04	--	.50	2.22	.147	53.9
						2	.096	-.095	.076	-.24	-.103	.16	.106	-.18	.17	.26	-.488	26.2	-5.67						
						3	-.076	.070	.076	.26	.087	.115	-.126	-.17	-.17	-.22	.488	-21.8	1.36						
	41 A	43,200	1.60	5.32 N	246.0	1	-.086	.060	.080	.49	.108	-.080	-.26	-.11	-.18	.18	.531	-17.2	6.59	.82	--	.50	1.92	.166	59.0
						2	.086	-.090	.092	.32	.098	.11	.21	.20	.11	-.18	.499	18.9	-3.71						
						3	-.081	.060	-.084	-.39	.108	.092	-.22	-.15	-.11	.17	-.423	-9.2	1.82						

Table II (Continued)

Date	Mission No.	Altitude msl ft.	Mach No.	Lateral Dist. Naut. mi.	Mag. Hdg. deg.	Reading Point	Peak Amplitude: Accelerometer Channels g's											Strain Gage μ, in./in.		Δp_I lb/ft^2			ΔP_O Avg. lb/ft^2	Δt Avg. sec.	Vert. Wave Angle deg.
							301	302	303	304	305	306	307	308	309	310	311	312	313	405	407	409			
6-8-66	72 A	31,200	1.49	.12 N	245.0	1	-.106	.085	.11	.49	-.18	.22	-.283	-.32	-.32	.41	.889	-47.0	10.9	1.07	--	.63	2.85	0.144	49.0
						2	.111	-.120	.11	.57	-.22	-.29	.261	-.30	-.27	.40	.781	32.7	-6.32						
						3	.116	.090	.12	.49	-.20	.29	-.261	-.29	-.33	-.36	.716	-25.8	3.18						
	57 R.B	37,600	1.66	5.90 N	248.5	1	-.081	.301	.059	-.86	.033	.034	.053	.088	.051	-.075	.282	11.6	6.81	.75	--	.52	1.76	.162	52.2
						2	.096	-.351	-.063	.21	-.043	.034	.053	-.079	-.051	.062	-.314	13.8	-3.27						
						3	-.076	.301	-.059	-.22	.038	-.046	.053	-.062	-.042	.053	.293	17.4	--						
	80 R.B	31,300	1.46	.14 N	246.6	1	.121	-.100	-.092	.43	.098	-.14	-.199	-.24	-.27	-.35	.759	26.2	12.0	1.14	--	.63	2.63	.161	60.4
						2	-.096	.095	.092	-.36	-.12	-.19	.217	-.32	-.24	.34	-.716	-43.6	-8.72						
						3	.101	.075	.092	.41	.098	-.15	-.212	-.25	.24	-.30	.770	32.7	-2.40						
	56 R.B	43,040	1.64	5.14 N	244.0	1	-.091	.080	.080	.26	.065	-.103	-.165	.14	-.085	-.12	-.390	10.9	6.81	.86	--	.60	2.09	.170	55.3
						2	.111	-.090	-.092	-.28	-.095	.103	.110	.115	.085	.16	-.434	-16.6	-4.36						
						3	.111	.070	.084	-.29	.081	-.092	-.150	.110	.076	.098	.369	18.9	-2.15						
	87 R.B	31,440	1.49	.40 N	245.4	1	.147	-.140	-.12	.30	-.070	-.11	-.124	-.18	-.24	-.32	.683	-48.2	12.7	1.07	--	.58	3.23	.148	48.9
						2	-.121	.110	.14	-.28	.076	.086	-.137	.15	.22	.37	-.694	38.5	-6.54						
						3	.127	-.110	.12	.39	.087	-.11	.115	-.18	-.20	-.33	.748	-29.8	2.72						
	55 R.B	43,200	1.64	5.16 N	244.0	1	.202	.130	-.16	.55	-.087	.080	-.221	.071	-.16	.31	.737	13.8	11.3	.82	--	.63	2.17	.169	58.4
						2	.177	-.170	.16	.47	-.087	-.092	.212	.12	.19	-.26	.737	-11.5	-3.49						
						3	.202	.150	.14	.44	.108	.103	-.212	-.079	.13	.30	.845	20.3	3.63						
	86 R.B	31,360	1.49	0	229.0	1	-.106	.090	-.101	.60	.27	-.21	.270	-.33	.41	-.35	1.12	26.2	10.2	1.07	--	.75	2.70	.144	45.9
						2	.101	-.095	.105	-.40	-.15	.24	.274	.26	-.38	-.35	.716	-49.3	-6.98						
						3	.111	-.090	-.118	.57	-.14	.19	.300	-.34	.41	.50	-.900	31.2	5.90						
6-9-66	86 SRB	31,000	1.50	.25 N	246.2	1	.20	-.152	.14	.54	-.17	.24	-.22	-.27	-.32	.62	.886	-53.3	5.89	1.21	1.06	.84	4.00	.153	51.1
						2	-.16	.127	.15	.64	.15	-.20	-.22	-.25	.36	-.42	-1.02	47.2	-4.31						
						3	.16	-.147	-.17	-.60	-.13	-.22	-.22	-.27	-.34	.41	1.09	-34.4	10.5						
	55 SRB	35,720	1.69	5.17 N	244.5	1	-.13	.054	.076	.17	-.092	.18	.051	.052	-.064	-.082	.256	12.3	1.31	.90	.64	.41	1.60	.140	55.5
						2	.079	-.064	-.061	-.20	.19	-.19	-.061	.083	.076	.15	-.245	-20.1	-1.36						
						3	.064	.044	-.041	.14	-.20	-.14	.068	-.13	-.051	.080	.192	21.8	1.31						
	87 SRB	31,000	1.53	.08 S	244.0	1	-.13	-.127	-.11	-.37	.12	-.12	-.13	-.20	.33	-.30	.640	-52.8	6.95	1.28	1.00	.67	3.44	.146	49.2
						2	.16	.103	.11	.43	-.13	.11	.15	-.22	-.29	.43	-.800	43.6	6.98						
						3	-.13	-.103	-.11	-.36	.12	-.094	-.15	-.16	-.27	.38	.896	-29.8	3.92						
	56 SRB	43,300	1.72	4.70 N	242.6	1	-.11	.083	.11	.27	-.087	.20	-.12	.092	-.13	.30	-.501	13.1	4.14	.93	.66	.44	2.77	.161	51.0
						2	.14	-.122	-.13	-.34	.14	-.19	.15	.096	.12	-.16	.448	-20.6	-2.72						
						3	.12	.098	.084	.27	-.17	-.14	.093	-.11	-.12	.18	.533	-18.9	2.62						
	80 SRB	31,000	1.53	.06 N	245.2	1	-.094	.064	.059	.36	-.11	-.094	-.18	-.29	-.25	-.27	.640	26.9	4.80	1.25	.89	.59	2.95	.140	48.0
						2	.098	-.093	.067	-.29	-.12	-.094	.17	.21	.27	.33	.533	-46.5	5.23						
						3	.11	-.069	-.081	.25	.11	.10	.20	-.24	.28	.33	-.619	-27.0	4.36						
	57 SRB	43,160	1.70	5.23 N	244.0	1	-.10	.078	.097	.24	.10	-.17	-.11	.096	-.102	-.13	.363	11.6	3.49	.90	.66	.41	1.94	.1[illegible]	54.3
						2	.12	-.098	-.10	-.29	-.17	.21	.10	-.11	.102	.23	-.440	-21.2	-1.82						
						3	-.11	.093	-.077	-.24	.18	.14	-.11	-.087	-.085	-.13	.395	21.1	2.62						

Table II (Continued)

Date	Mission No.	Altitude msl ft.	Mach No.	Lateral Dist. Naut. mi.	Mag. Hdg. deg.	Reading Point	Peak Amplitude: Accelerometer Channels g's 301	302	303	304	305	306	307	308	309	310	311	Strain Gage μ, in./in. 312	313	Δp_I lb/ft 405	407	409	Δp_O Avg. lb/ft^2	Δt Avg. sec.	Vert. Wave Angle deg.
6-9-66	41 SA	42,920	1.52	4.57 N	240.0	1	-.081	.059	.084	-.37	.15	.19	-.14	.074	-.097	-.13	.405	11.6	1.96	.93	.70	.46	2.28	0.180	60.4
						2	.009	-.069	-.085	.25	-.12	-.18	.12	-.087	.11	.15	-.416	-20.1	-1.59						
						3	-.054	.049	.059	-.25	-.15	-.16	-.11	-.13	-.097	.089	-.331	24.7	2.18						
	73 SA	31,720	1.50	.49 S	243.4	1	.13	-.12	-.11	.32	-.14	-.24	.20	-.26	.31	-.24	.672	-49.9	5.45	1.31	.96	.67	3.03	.155	54.4
						2	-.12	.108	.11	.38	-.19	.21	-.18	-.25	-.25	.38	-.661	40.0	5.07						
						3	.11	-.113	-.11	-.32	.20	-.27	.17	-.28	.25	.23	.779	-26.4	3.71						
	42 SA	43,060	1.52	4.69 N	241.2	1	.17	.088	.12	.57	-.24	-.21	-.24	.35	-.19	-.18	.736	14.5	5.89	.93	.70	.61	2.25	.176	63.6
						2	.16	-.118	-.14	--	-.23	.20	-.18	-.33	-.14	.23	-.875	-18.9	-3.86						
						3	-.18	.088	.088	.48	.23	-.21	-.20	.33	.19	-.17	-.726	21.8	5.15						
	75 SA	31,680	1.55	0	246.5	1	.17	-.132	.14	-.31	-.14	.15	-.17	-.17	.31	-.23	-.811	26.9	5.89	1.25	.88	.67	3.80	.149	48.4
						2	.15	.113	-.14	.44	-.11	-.13	-.13	-.18	.28	.31	.896	-44.2	9.59						
						3	.15	-.142	-.13	-.34	-.10	.14	-.13	-.18	-.28	-.28	-.726	31.9	5.89						
	43 SA	43,000	1.65	4.62 N	243.5	1	.12	.069	.092	.32	.10	-.083	-.18	.27	-.12	-.16	.512	12.3	3.49	.93	.66	[illegible]	2.64	.137	51.6
						2	-.11	-.103	-.11	.30	.11	-.12	.19	.21	.14	.24	-.159	-19.5	-2.27						
						3	.11	.069	-.081	-.35	-.13	.086	-.23	-.21	-.10	-.19	.381	13.8	2.18						
	42 SA	43 300	1.70	4.92 N	244.5	1	.11	-.088	.084	-.29	.057	-.10	.089	-.070	-.060	.14	-.405	10.2	-2.27	.69	.64	.54	1.98	[illegible]	51.4
						2	-.11	.059	-.059	.24	-.12	.12	-.092	.074	.089	-.13	-.405	-17.8	2.15						
						3	-.11	-.061	.084	.22	.14	.11	.058	-.061	-.059	.098	[illegible]	6.7	-2.81						
	46 SA	42,900	1.65	4.71 N	246.0	1	-.059	.069	.051	.30	-.065	-.066	.15	.15	.11	.12	.137	19.5							
						2	.059	-.075	-.069	.25	.065	-.072	.14	.15	.10	.17	.416	23.2	-2.04						
						3	-.074	.059	-.065	-.31	-.087	.075	-.11	.13	-.089	-.11	-.363	16.3	2.15						
	72 SA	31,320	1.53	.63 N	248.5	1	-.074	.039	-.061	-.18	.11	-.077	.051	-.066	.12	-.13	.159	[illegible]		2.18	.88	.54	2.16	1.85	50.0
						2	.069	-.073	-.057	.18	-.087	.14	-.053	.12	.12	.14	.137	30.[illegible]	1.80						
						3	.054	-.069	-.061	-.25	-.057	.10	-.057	-.10	-.11	-.113	-.299	20.1	7.41						
6-13-66	18 A	37,740	1.64	.09 S	231.0	1	.12	.094	.11	.32	.18	-.14	-.17	-.21	-.20	-.22	.416	19.9	12.8	.99	1.46	2.67	2.82	.100	12.2
						2	-.11	-.11	-.11	-.35	-.16	.15	-.19	.20	.27	.35	-.649	41.0	-32.0						
						3	-.11	-.094	.11	-.28	.16	.15	.15	.23	-.22	-.26	.619	27.6	10.2						
	18 B	49,600	1.66	.36 S	231.0	1	.093	.084	.081	.25	-.070	.098	-.086	-.10	.21	.28	.118	16.7	-27.9	[illegible]	[illegible]	[illegible]	[illegible]	.236	15.7
						2	-.096	-.089	-.084	-.27	.096	-.082	.077	-.092	-.17	-.19	-.162	-31.4	15.4						
						3	.083	.079	-.080	-.25	.079	-.071	-.086	-.088	.16	.20	.539	21.4	-15.0						
	21 A	37 840	1.69	.21 S	230.0	1	-.10	.11	.12	.39	.141	.17	-.20	-.22	-.23	-.25	[illegible]	19.2	13.5	.93	[illegible]	[illegible]	[illegible]	[illegible]	11.0
						2	.13	-.12	.11	-.39	.161	-.20	.21	-.23	.31	.42	-.704	41.9	-27.2						
						3	-.12	.094	-.11	-.33	-.130	.15	.24	0.24	-.27	-.30	[illegible]	23.7	16.7						
	21 B	49,160	1.72	.35 S	231.3	1	.088	.070	.084	.25	.073	.086	-.13	-.15	.21	.29	.410	15.4	10.3	.82	1.7[illegible]	2.0[illegible]	1.88	[illegible]	12.1
						2	-.091	-.084	-.076	-.28	.073	-.093	-.11	-.15	-.18	-.18	-.462	-29.5	-21.5						
						3	.078	.074	-.080	.25	.096	-.082	.16	.13	.16	.22	.440	23.7	16.0						
	29 A	49,300	1.67	.03 N	232.8	1	.088	.065	.084	.23	.079	.075	-.095	-.11	.15	-.16	.429	14.7	10.3	.99	1.33	1.40	1.87	.185	46.6
						2	-.091	-.077	-.097	-.25	-.081	-.082	.120	-.13	-.14	.23	-.385	-25.6	-23.2						
						3	.075	.070	-.084	-.27	.096	.086	-.115	-.12	.13	.19	.429	25.0	16.7						

Table II (Continued)

Date	Mission No.	Altitude msl ft.	Mach No.	Lateral Dist. Naut. mi.	Mag. Hdg. deg.	Reading Point	Peak Amplitude													Δp_I lb/ft^2			Δp_0 Avg. lb/ft^2	Δt Avg. sec.	Vert. Wave Angle deg.
							Accelerometer Channels g's											Strain Gage μ, in./in.							
							301	302	303	304	305	306	307	308	309	310	311	312	313	405	407	409			
6-13-66	29 B	38,140	1.67	0.11 S	232.0	1	.13		.114	.28	-.060	.071	-.098	-.13	.24	-.19	.495	19.2	12.8	1.13	1.60	1.78	3.42	.156	45.6
						2	.12		-.114	-.34	-.081	-.088	-.13	-.10	-.19	.28	-.583	-43.0	-28.6						
						3	-.12		-.143	-.27	.068	.075	-.090	-.10	.17	-.23	.627	21.8	16.0						
	32 A	49,820	1.64	.52 N	235.0	1		.070	.081	.22	.085	-.12	-.12	.087	.17	-.16	.451	-14.1	9.62	.78	1.26	1.91	1.95	.182	47.3
						2	-.081	-.071	-.080	-.24	.073	.13	.11	-.10	-.14	.23	.462	27.6	-22.5						
						3	.073	.084	.023	-.22	-.087	.11	.11	.078	.16	.18	.429	-19.2	12.2						
	32 B	38,000	1.67	0	233.0	1	.10	.089	.073	.25	.090	-.11	-.15	-.13	-.18	-.21	.605	16.7	10.9	.85	1.46	2.61	2.30	.149	43.4
						2	-.096	-.099	.101	-.32	-.076		.14	.11	.22		.581	-35.1	-13.8						
						3	.083		-		.079	-.593	-.13	-.16		-.22	-.561	18.0	12.2						
6-20-66	48 A	41,300	1.55	2.20 N	232.0	1	-.131	-.163	.025		.130	-.126	-.191	-.157	-.148	-.204	.531	-25.6	9.54	1.14	1.95	2.15	2.67	.179	51.8
						2	.151	.122	-.024	-.330	-.114	.149	-.178	.179	.153	.257	-.499	20.5	-21.8						
						3	.131	-.153	-.023	-.408	-.119	-.144	-.191	-.192	-.169	-.301	-.542	-14.1	13.6						
	79 A	32,100	1.45	1.90 S	232.0	1	.075	-.081	.017	-.395	-.108	-.264	-.178	-.219	-.186	.332	-.867	-48.1	-35.4	1.00	2.08	2.20	2.46	.153	54.1
						2	-.090	.076	.017	.295	-.103	.126	.178	.153	.292	.257	.802	28.2	19.8						
						3	.090	-.071	-.024	-.295	-.018	-.184	-.157	.214	.195	-.213	-.737	-26.9	-19.1						
	53 A	42,700	1.59	5.00 N	232.0	1	-.080	-.092	.012	-.235	-.038	.046	-.034	-.031	.068	-.089	-.325	-16.7	-14.3	.79	1.47	1.64	1.47	.175	53.7
						2	.085	.066	-.013	.200	-.043	-.040	.030	.039	-.059	.093	.271	15.4	6.81						
						3	-.085	-.066	-.010	-.191	-.043	.057	-.034	-.035	.059	-.089	-.304	-10.3	-9.54						
	84 A	31,220	1.43	0	235.6	1	-.110	.092	.019	.391	-.087	-.287	-.119	-.179	.267	-.245	-.618	-53.9	-35.4	1.07	2.34	2.61	2.58	.144	49.4
						2	.110	-.122	-.523	-.391	-.108	.138	.136	-.166	-.241	.315	.672	25.6	20.4						
						3	.095	.092	.024	.356	-.092	-.132	.093	.162	.263	.315	.596	-32.1	-17.7						
	54 A	43,000	1.57	4.87 N	230.4	1	.095	-.092	.016	.226	[illegible]	.086	.038	.048	-.080	.151	.282	-15.4	6.13	.78	1.39	1.53	1.47	.164	55.1
						2	-.101	.076	.012	-.322	.054	-.060	-.042	-.066	.102	-.115	-.369	13.5	-12.3						
						3	.101	.076	-.014	.243	-.070	-.669	-.059	.018	-.068	-.111	.314	-8.98	8.86						
	59 B	43,360	1.41	5.00 N	233.2	1	.161	.143	.025	-.482	.108	-.075	.080	-.122	.131	.253	.781	12.8	-21.8	1.21	2.21	2.15	2.34	.218	68.7
						2	-.151	.117	-.023	.578	-.092	.063	-.072	-.144	.148	-.160	.737	-21.8	10.9						
						3	.156	-.143	.019	.491	-.103	-.080	-.076	-.076	-.161	.231	.759	18.6	-9.54						
	98 B	31,340	1.50	0	233.0	1	.131	-.153	-.025	4.18	.108	-2.87	-.165	-.227	-.297	-.408	.943	23.7	42.2	1.25	2.51	2.69	3.04	.154	50.5
						2	-.121	.122	.027	-.400	-.103	.161	.195	-.236	.372	.505	-.889	-53.2	21.8						
						3	.121	-.127	.023	.400	-.152	-.155	-.186	-.201	-.339	.319	.911	32.1	-21.8						
	90 B	31,800	1.55	.17 S	230.5	1	-.111	.097	.020	.405	-.103	-.287	.216	-.219	.330	-.315	.737	-53.9	-34.5	1.07	2.34	2.61	2.80	.145	52.2
						2	.121	-.122	-.023	-.304	-.119	.247	-.178	.188	-.246	.430	-.781	29.5	17.0						
						3	.116	.081	.021	-.404	-.108	-.155	.212	-.214	-.263	.310	.759	-25.6	-21.8						
	85 A	32,320	1.45	4.35 N	231.4	1	--	--	--	--	--	--	--	--	--	--	--	--	--	1.00	2.04	2.25	2.39	.143	60.1
						2	--	--	--	--	--	--	--	--	--	--	--	--	--						
						3	--	--	--	--	--	--	--	--	--	--	--	--	--						
	93 B	32,140	1.55	.17 S	231.4	1	-.141	.102	.026	.400	.173	-.276	-.148	.153	.309	-.248	.813	23.1	-38.2	1.00	2.25	2.56	2.90	.141	52.2
						2	.141	-.143	.026	-.456	.152	.310	-.169	-.175	-.288	.328	-.867	-55.1	16.4						
						3	.136	.122	.024	.426	.168	.247	-.114	.157	.225	.288	.997	28.2	-17.7						

Table II (Continued)

Date	Mission No.	[illegible]titude msl ft.	Mach No.	Lateral Dist. Naut. mi.	Mag. Hdg. deg.	Reading Point	Peak Amplitude													[illegible]			[illegible]	[illegible]	Vert. Wake Angle deg.
							Accelerometer Channels g's											Strain Gage μ, in. in.							
							301	302	303	304	305	306	307	308	309	310	311	312	313	[illegible]	[illegible]	[illegible]			
6-21-66	89 B	31,760	1.46	.12 N	232.0	1	-.12	.11	.025	.49	-.16	-.26	-.19	.20	-.19	.43	.835	-53.1	[illegible]	[illegible]	[illegible]	[illegible]	2.81	[illegible]	[illegible]
						2	.14	-.15	-.025	-.48	.14	.31	.23	.23	.30	-.28	-.759	27.9	[illegible]						
						3	.12	-.12	.082	-.43	.13	.23	.20	.20	-.25	.27	.791	-31.3	-17.7						
	[illegible]8 B	43,600	1.67	5.12 N	232.6	1	.13	.090	.020	.34	.081	-.063	.053	-.12	-.12	-.14	.423	9.54	-12.3	.82	[illegible]	2.09	1.55	[illegible]	[illegible]
						2	-.12	-.12	-.017	-.41	.076	.080	-.071	-.078	.14	.22	.390	-16.3	8.86						
						3	-.12	.095	.016	.38	.076	.097	-.057	-.10	-.11	.14	.390	17.7	-7.49						
	99 B	31,700	1.47	.17 N	233.0	1	-.14	.12	.026	.51	.11	-.12	.12	.21	.28	.42	.802	-37.2	16.3	1.25	1.86	2.63	3.22	[illegible]	57.0
						2	.16	-.15	-.026	-.45	.10	-.14	.11	-.15	-.31	-.39	.824	27.2	-35.4						
						3	.13	-.13	-.027	.45	-.098	-.13	.11		-.28	.33	.813	-28.6	-19.8						
	66 B	39,860	1.59	5.00 N	233.0	1	-.071	.055	.014	.17	.038	-.034	-.027	-.052	-.064	.12	.239	-16.3	5.45	.68	[illegible]	1.13	[illegible]	.167	[illegible]
						2	.066	-.060	.010	-.21	-.038	.029	-.035	.11	.081	-.093	-.217	10.2	-10.9						
						3	-.081	.055	.012	-.16	-.038	-.029	.027	-.087	-.059	.084	-.228	-7.49	8.15						
	100 B	31,760	1.46	.14 S	231.8	1	-.10	.085	.021	.27	.065	-.068	-.053	.10	.17	-.25	.520	-51.8	-32.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	49.2
						2	.096	-.11	.029	-.34	-.065	-.10	.084	-.10	.16	.25	-.531	27.9	15.0						
						3	.081	.080	.025	-.27	-.065	-.080	.057	.10	-.14	.22	.585	-27.9	-20.1						
	68 B	44,080	1.62	4.83 N	232.0	1	.096	.675	.016	.32	-.12	.074	-.071	-.078	-.10	.18	.390	7.49	6.13	.65	[illegible]	1.35	1.31	.167	54.5
						2	-.096	-.095	.013	.29	.11	-.086	.088	.11	.14	-.12	.336	-14.3	-10.2						
						3	.096	.080	-.014	-.30	-.13	-.074	-.084	-.083	.081	.12	.347	12.9	9.54						
	69 B	39,440	1.39	5.00 N	232.8	1	-.096	.065	.020	.25	-.065	-.051	-.049	-.056	.089	-.093	.434	-21.1	6.81	.85	1.32	1.97	[illegible]	.186	72.0
						2	.11	-.095	-.021	-.43	.087	.057	-.014	.061	-.093	.15	-.347	14.3	-16.3						
						3	-.091	.060	.013	.38	.10	.068	-.044	-.056	-.11	-.10	.317	-12.3	9.54						
	48 A	43,140	1.60	5.00 N	231.6	1	-.081	.070	.017	.24	-.065	-.068	-.053	.052	.072	-.098	.328	-19.8	-11.3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
						2	.11	-.080	-.011	-.39	-.051	.057	-.019	-.074	.089	.11	-.369	12.9	7.19						
						3	.091	.070	.014	.24	.060	-.063	-.049	.074	-.072	-.080	-.236	11.6	-8.18						
	40 A	43,840	1.65	5.40 N	235.0	1	.14	.090	.020	-.43	.051	-.071	.049	.078	.093	-.12	.390	-17.7	6.81	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
						2	-.11	-.12	.018	.40	.087	.13	-.049	-.061	-.085	.16	-.390	12.9	-12.9						
						3	.13	.095	-.017	-.34	.087		-.053	-.056	-.085	-.11	.434	-12.3	7.19						
	60 B	43,940	1.64	5.16 N	233.2	1	.12	.075	.018	-.38	.065	.051	.040	-.043	-.072	-.11	-.379	-15.0	.45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
						2	-.12	-.10	.014	.38	.065	.097	.057	-.039	.089	.14	.358	11.6	-9.54						
						3	.12	.085	.016	-.31	.081	-.051	.010	.013	.076	-.12	-.379	-9.54	8.18						
	61 B	43,260	1.62	4.76 N	232.5	1	-.091	.055	.019	-.33	.12	.15	-.075	.11	.072	-.071	-.401	-21.1	6.81	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
						2	.096	-.090	.014	.31	-.098	.086	-.088	-.14	-.064	.11	[illegible]	[illegible]	[illegible]						
						3	.081	.060	-.019	-.32	[illegible]	-.086	-.075	.12	-.081	[illegible]	[illegible]	[illegible]	[illegible]						
	101 B	31,700	1.50	0	232.8	1	-.11	.080	--	.30	-.076	.22	-.088	.10	.19	-.20	.520	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
						2	.14	-.11	.030	-.31	.070	-.29	-.10	.087	.18	.23	-.542	25.9	-26.6						
						3	.13	.075	.022	.25	.076	.21	-.093	-.096	-.18	.19	.672	-25.2	-13.6						
	85 A	31,700	1.50	.22 N	233.7	1	-.12	.090	[illegible]	-.30	.065	.062	.081	.083	.19	.35	.520	19.1	13.6	1.08	[illegible]	1.69	[illegible]	[illegible]	[illegible]
						2	.13	-.12	.021	.29	-.076	.091	.088	-.087	.17	.35	-.561	-42.2	-26.6						
						3	.11	.10	.022	.30	.076	-.091	-.097	-.083	-.19	-.27	.661	18.7	-14.3						

Table II (Concluded)

[illegible]	[illegible]	Altitude ft.	[illegible]	Lateral Dist. Naut. mi.	Mag. Hdg. deg.	Reading Point	Peak Amplitude: Accelerometer Channels g's 301	302	303	304	305	306	307	308	309	310	311	Strain Gage μ in./in. 312	313	ΔP1 lb/ft² 405	407	409	ΔPo Avg lb/ft²	Δt Avg. sec.	Vert. Wave Angle deg.
6 22	[illegible]	37,[illegible]	1.63	.15 N	224.5	1	.13	-.12	[illegible]	.57	-.12	[illegible]	.39	-.25	-.20	-.31	.243	-96.7	-38.3	.96	1.78	2.47	2.66	.162	50.5
						2	.13	.13	.11	-.38	.14	.15	-.35	.24	.30	.31	-.278	24.0	17.3						
						3	.13	-.12	-.12	.44	-.13	.13	-.37	-.28	-.20	-.28	.278	-61.3	-18.0						
	19 A	37,[illegible]	1.42	.14 N	233.5	1	-.011	.075	.092	.22	-.054	.046	.044	-.052	-.093	-.15	.121	-81.7	-25.6	.96	1.48	1.64	2.06	.154	47.7
						2	.071	-.075	.071	-.21	-.043	.050	-.044	.065	.127	.22	-.113	19.6	11.5						
						3	.066	.085	-.075	-.19	.054	-.063	.048	-.048	.093	-.18	.134	-40.9	-12.8						
	[illegible] A	13,[illegible]	1.60	1.31 S	259.0	1	.13	.085	-.108	.23	.065	.098	.079	.091	.23	.32	-.325	-91.3	-30.8	.99	1.33	1.25	3.44	.167	50.9
						2	-.14	-.100	.104	.24	.065	-.080	.083	-.10	-.22	-.22	.347	22.9	12.8						
						3	-.13	.085	-.100	.25	.076	.086	.075	-.096	.18	-.23	.247	-57.2	-19.2						
	[illegible] A	[illegible]	1.65	.20 S	229.8	1	-.081	-.070	.071	.18	-.051	.063	.092	-.087	.089	.13	-.182	-87.2	-28.9	1.10	1.53	1.58	2.04	.163	47.5
						2	.076	.080	.075	-.17	.049	-.075	-.075	-.078	-.127	-.13	.139	19.6	15.4						
						3	.091	-.080	.042	-.25	-.034	.063	.079	.078	.081	-.13	-.191	-54.5	-15.4						
	[illegible] B	13,[illegible]	1.61	4.00 N	230.0	1	-.061	.055	.067	.25	-.065	-.052	.066	.065	.085	.15	.117	5.45	5.13	.66	.97	1.36	1.48	.169	56.2
						2	.076	-.070	-.058	.26	.060	.046	-.072	.065	.076	-.11	-.121	-35.4	-11.5						
						3	.071	.055	.054	-.26	-.076	-.057	.061	-.078	.085	.10	-.104	7.63	7.69						
	24 A	13,[illegible]	1.60	5.06 N	233.0	1	.066	-.075	.046	-.21	.017	.046	.048	-.052	.068	.089	-.117	7.09	-11.5	.72	1.16	1.60	1.44	--	--
						2	.081	.060	.050	-.22	.043	.057	.053	.052	-.059	-.071	.087	-36.8	6.41						
						3	.066	.060	.050	.21	.043	.040	.048	-.043	-.076	.062	-.087	13.1	-8.34						
	[illegible] A	13,[illegible]	1.60	.92 S	225.3	1	.076	.055	.050	-.14	.081	-.075	.026	.035	.055	.098	-.069	5.45	-11.5	.61	.90	1.21	1.18	.165	--
						2	-.066	-.060	.042	.11	-.087	.13	-.026	.048	.042	-.075	.069	-32.7	5.77						
						3	.076	.060	.042	-.15	.12	.103	.035	-.043	.051	.098	-.087	9.81	-5.13						
	25 B	13,22[illegible]	1.59	4.89 N	233.0	1	-.10	.075	.083	.55	.14	.103	-.14	.26	-.18	-.18	.208	7.63	5.13	.77	.99	.97	1.42	.179	56.4
						2	.13	-.100	.083	.39	.13	.103	.27	-.21	.18	.18	-.174	-27.2	-14.1						
						3	.10	.100	.11	-.41	.11	-.103	-.21	-.19	-.13	.22	-.174	15.3	6.41						
	23 B	37,4[illegible]	1.63	.50 N	232.5	1	-.10	.095	.10	.21	-.043	-.046	.044	-.056	-.17	-.16	-.217	-70.8	-23.1	.93	1.40	1.99	2.37	.157	48.0
						2	.12	-.100	-.083	-.21	.043	-.046	-.044	.048	.17	.23	.226	18.0	12.8						
						3	-.10	.080	-.083	.19	.049	-.057	-.044	-.061	.102	-.23	-.156	-38.1	-14.1						
6-2-[illegible]	27 A	37,9[illegible]	1.64	.39 N	231.5	1	-.093	-.12	.11	.32	-.12	.19	.39	.15	-.14	.34	.499	-163.5	-33.4	1.07	1.47	1.34	2.40	.162	46.1
						2	.098	.11	-.10	-.31	.12	.15	-.25	.27	.17	-.23	.651	24.5	20.5						
						3	-.098	-.11	.097	-.23	-.13	-.16	-.26	-.34	-.19	-.22	.499	-92.6	14.1						
	22 B	[illegible]	1.67	4.15 N	229.2	1	.13	-.12	.11	.36	-.070	-.055	-.060	.087	-.14	.23	.412	-43.6	6.41	.66	1.04	1.36	1.63	.168	52.8
						2	-.12	.12	-.12	-.36	-.065	.061	.073	-.087	.14	-.19	-.347	12.0	-13.1						
						3	.14	-.10	.10	.29	-.070	-.055	-.077	-.091	-.10	.18	.401	-43.6	8.98						
	31 A	37,46[illegible]	1.61	.12 N	231.0	1	-.078	.091	.085	.27	.070	.12	.073	-.074	-.15	-.16	.455	14.2	10.9	.85	1.23	1.83	1.98	.155	47.3
						2	.093	-.10	-.085	-.29	-.070	-.10	-.073	.069	.18	.28	-.434	-130.8	-23.2						
						3	-.083	.096	.081	.21	.087	.099	.077	.069	-.16	-.18	.455	-18.0	-14.5						
	[illegible] A	13,2[illegible]	1.64	5.02 N	231.6	1	.098	.080	.085	.19	.092	.099	-.081		.081	.14	.325	-57.2	-11.6	.66	.89	1.31	1.25	.163	59.0
						2	-.083	-.086	-.077	-.31	.10	.12	.081	.12	.060	-.099	-. 82	10.4	7.05						
						3	.093	.070	.064	-.25	.076	-.083	-.085	.10	.068	-.099	-.314	-43.6	-7.99						
	[illegible] B	37,40[illegible]	1.65	.10 N	232.6	1	.14	-.11	.11	.44	.087	-.10	.15	-.13	-.20	-.22	.531	15.3	-26.2	.93	1.42	2.01	2.09	.159	47.7
						2	-.14	.11	-.097	-.10	-.10	.099	-.12	.14	.24	.33	-.561	-139.0	12.8						
						3	.12	.11	-.11	-.36	.087	-.10	-.11	-.14	-.18	-.24	.683	18.0	-16.7						
	26 B	37,4[illegible]	1.66	.25 S	231.0	1	.21	-.16	.17	.55	-.15	.32	.23	-.22	-.25	-.31	-.976	-234.3	15.4	.96	1.70	2.42	5.50	.160	19.4
						2	-.18	.16	.15	-.51	.11	-.37	-.23	.24	.32	.43	1.26	21.8	-34.9						
						3	.19	-.15	-.17	.43	.20	.31	.17	.21	-.27	-.39	.889	-100.9	18.0						
	6X-2	13,[illegible]	1.67	1.86 N	158.0	1	-.11	-.080	.085	-.38	-.054	-.033	-.664	.083	-.071	-.11	-.520	-111.7	10.3	.88	1.21	1.17	1.79	.768	--
						2	-.13	.675	-.097	.31	-.070	-.039	.055	-.083	.094	.16	.564	19.6	-20.3						
						3	-.13	.080	.097	-.30	.054	-.038	.060	-.096	-.073	-.14	.499	-57.2	13.5						

Table III

SONIC BOOM INDUCED ACCELERATION AND STRAIN RESPONSES OF TEST STRUCTURE NO. 2 FOR A RANGE OF F-104 FLIGHT CONDITIONS

Date	Mission No.	Altitude msl ft.	Mach No.	Lateral Dist. Naut. Mi.	Mag. Hdg. deg.	Reading Point	Peak Amplitude													ΔP_1 lb/ft^2			ΔP_0 Avg. lb/ft^2	Δt Avg. sec.	Vert. Wave Angle deg.
							Accelerometer Channels g's											Strain Gage μ, in./in.							
							301	302	303	304	305	306	307	308	309	310	311	312	313	405	407	409			
6-1-66	14	35,600	1.7	--	--	1	-.071	.050	-.088	.130	.040	.040	-.049	-.039	-.085	.173	.284	10.2	4.77	.47	.6[illegible]	.31	1.19	.087	--
						2	.097	-.070	.117	.147	-.034	.052	.049	-.044	.110	-.137	.292	-13.6	-4.09						
						3	.066	.065	-.104	.135	-.040	-.040	.049	-.052	.085	.146	.361	- 7.49	--						
6-13-66	26 A	21,200	1.4	.08 N	232.5	1	.073	-.084	-.13	.28	.090	-.13	-.13	.16	.20	.28	-.616	8.98	-9.54	.71	.67	.95	1.87	.074	50.9
						2	-.086	.089	-.13	.28	-.076	-.10	-.15	-.14	-.18	-.21	.704	-13.5	7.69						
						3	.075	-.11	.15	-.29	.079	-.12	.14	.17	.21	-.21	.627	7.69	-8.86						
	26 B	29,660	1.6	.64 S	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
6-14-66	26 A	--	--	--	--	1	--	--	.025	.072	.027	.034	.021	.021	.060	.067	--	--	--	.69	.64	1.00	2.08	.072	--
						2	--	--	.025	-.053	.027	-.034	.026	-.017	-.062	-.047	--	--	--						
						3	--	--	.021	.055	-.027	.034	.021	.017	.085	.054	--	--	--						
	26 B	29,920	1.54	.10 S	238.0	1	.079	-.080	-.11	-.18	.055	.045	.051	-.061	.15	.21	-.390	10.3	7.49	2.00	.67	.36	1.56	.079	46.6
						2	.074	.060	.093	-.20	-.065	-.067	.068	.063	-.12	.23	.444	-18.6	-10.3						
						3	.064	-.080	-.085	.22	.055	.045	-.060	-.061	.18	-.19	.433	- 8.98	8.86						
	36 A	--	--	--	--	1	.099	-.10	-.17	.35	.155	-.15	-.18	.23	.22	.32	-.617	8.98	- 9.69	2.07	.67		2.02	.071	--
						2	-.13	.11	.16	-.34	.153	.19	.16	-.24	-.20	-.34	-.661	-16.7	8.17						
						3	.12	-.135	-.15	.41	-.180	.18	.18	.23	.23	.28	.812	- 6.41	-8.48						
	36 B	29,700	1.52	0	232.6	1	-.059	-.060	.080	-.17	.055	.067	.038	-.030	.12	.21	-.379	8.98	-9.69	1.74	.71	-.36	1.52	.079	49.4
						2	.074	.065	-.085	-.18	-.065	.056	-.043	.042	-.087	-.12	.422	-17.3	9.54						
						3	-.074	-.065	.063	.17	.060	-.051	-.043	-.065	.12	.15	.347	- 9.62	-7.87						
	37 A	29,700	1.49	0	231.2	1	-.059	-.075	.088	.22	.095	-.073	.077	.092	.15	.23	.422	8.98	-7.87	1.65	.64	.36	1.39	.079	48.7
						2	.089	.070	-.094	-.21	-.087	.11	-.081	-.096	.17	-.16	.531	-14.7	6.81						
						3	.084	-.090	.109	-.27	.087	-.067	.094	.10	-.13	.19	.487	- 7.05	-8.48						
	37 B	21,080	1.39	.02 S	231.0	1	.089	-.125	-.21	.43	.126	-.24	.24	-.20	-.27	.38	-.823	10.3	-9.08	2.26	.75	.40	2.77	.075	53.2
						2	-.084	.105	.195	.46	.175	.26	.19	.22	.32	-.33	.845	-15.4	8.86						
						3	.094	-.13	-.18	-.39	-.126	-.17	.21	.21	-.32	.38	-.867	- 8.34	-7.87						
6-15-66	1X-A	14,080	1.21	.47 N	236.0	1	-.13	-.15	.037	--	.146	.11	.15	.20	-.22	.42	.832	15.0	9.54	1.26	1.13	1.55	3.75	.079	62.1
						2	.11	.13	.025	--	.134	-.13	-.16	-.17	.21	-.41	-1.13	-27.6	-16.7						
						3	.13	-.14	.029	--	.107	.11	.17	-.18	-.24	.31	1.26	--	12.9						
	1X-B	28,140	1.5	.13 N	233.0	1	-.051	.050	--	.18	.095	-.080	-.089	.083	.11	.25	-.384	8.86	6.13	.50	.65	.95	1.51	.079	48.1
						2	.071	-.067	--	-.20	.095	.068	.081	.10	.12	-.17	.491	-14.1	-7.69						
						3	.071	.060	--	.18	-.054	-.097	.085	.087	.11	.16	.373	--	8.17						
	2X A	29,700	1.32	.66 N	251.0	1	.091	-.072	-	.33	.112	-.091	.081	-.074	.097	.18	-.544	-20.5	-11.5	.70	.87	.87	1.74	.092	63.5
						2	.096	.070	--	.30	-.102	.15	-.11	.078	-.085	-.17	-.533	14.3	8.86						
						3	-.10	.060	--	-.36	.129	.14	-.11	-.091	-.10	.16	.619	-19.2	-12.8						
	2X B	14,080	1.20	.22 N	233.0	1	-.17	-.20	.033	--	.123	-.097	-.16	-.17	.26	.50	--	17.0	10.2	1.26	1.26	1.86	4.36	.079	62.0
						2	.23	.17	--	--	.107	.14	.16	.15	-.30	-.36	--	-30.1	-19.2				--		
						3	-.19	-.13	--	--	-.097	-.11	.16	.17	.28	.34	--	13.6	11.6						
	3X A	29,100	1.58	.17 N	234.0	1	.046	.050	--	.14	.079	.097	.11	.083	.097	.14	.373	8.17	--	.46	.52	.75	1.31	.075	51.5
						2	.046	-.041	--	-.16	.090	-.18	-.13	.083	.11	-.14	.331	-10.3	-6.41						
						3	-.046	.060	--	.16	.101	.12	.14	-.087	.080	.15	-.288	7.49	6.81						

Table III (Continued)

[illegible]	[illegible]	Altitude ft	[illegible]	Lateral Dist. Naut. Mi.	Max. Hdg. deg.	Reading Point	Peak Amplitude: Accelerometer Channels g's 301	302	303	304	305	306	307	308	309	310	311	Strain Gage μ, in./in. 312	313	ΔP_1 lb/ft^2 405	407	409	ΔP_0 Avg. lb/ft^2	Δt Avg. sec.	Vert. Wave Angle deg.
[illegible]	[illegible]	[illegible]	[illegible]	.18 N	235.0	1	-.086	-.12	--	.36	-.097	-.10	.17	.12	.20	-.23	-.875	14.3	9.54	.91	.95	1.63	2.25	.07[illegible]	63.5
						2	.11	.099	--	.50	-.081	.097	-.1[illegible]	.11	-.17	.26	.853	-25.0	-14.7						
						3	.10	-.087	--	.49	-.086	-.091	-.14	-.16	.21	-.27	.717	--	--						
	[illegible] A	[illegible]	1.28	.18 N	235.0	1	.19	.099	.029	.51	.180	.24	.30	.27	.36	.52	.917	15.0	10.2	.95	1.04	1.59	3.36	.067	55.0
						2	-.14	-.13	-.021	--	.202	-.27	-.26	-.27	-.41	-.43	-1.15	-21.8	-15.4						
						3	.15	-.13	--	--	.208	-.23	.25	.24	.46	.51	.896	--	--						
	[illegible]	[illegible]	[illegible]	[illegible] S	233.5	1	.14	.099	--	.28	.112	.080	-.085	.13	.25	.40	.704	12.9	8.17	.85	.78	1.03	2.58	.077	45.6
						2	-.091	-.098	--	-.33	.073	-.10	-.10	-.12	-.23	-.30	.811	-21.8	-14.1						
						3	.12	.099	--	.31	-.075	.097	.10	-.16	.22	-.31	.779	--	10.2						
[illegible]	[illegible]	[illegible]	[illegible]	.10 S	230.3	1	.054	-.074	.020	.20	.054	-.093	.11	-.091	-.14	.28	-.416	7.69	-6.06	.62	.55	.81	1.51	.075	43.1
						2	-.098	.079	-.020	-.24	-.054	.14	.12	.17	.18	.22	.512	-12.2	6.81						
						3	.069	-.10	.020	.25	.065	-.087	.11	.18	-.18	-.22	.427	5.13	-5.45						
	[illegible]	[illegible]	[illegible]	.26 [illegible]	228.5	1	.064	-.099	.022	.24	-.087	-.12	.13	.13	.18	.30	-.544	7.69	5.45	.65	.72	1.13	1.73	.073	51.1
						2	-.073	.065	-.022	-.21	.092	.13	-.11	.15	-.16	-.24	.704	-13.5	-7.27						
						3	.073	-.11	-.022	.27	.076	-.13	.12	-.13	.16	-.22	.555	-7.69	6.81						
	[illegible]	[illegible],700	[illegible]	.25 E	344.0	1	.064	-.060	.022	-.18	-.049	.057	-.44	-.10	.26	-.20	-.309	9.62	7.49	.67	.76	.69	1.78	.071	41.8
						2	.069	.060	-.039	.19	.076	.057	.066	-.12	-.28	.20	.437	-20.5	-8.48						
						3	-.064	-.070	.020	-.19	-.054	-.082	-.044	-.11	-.22	.19	-.331	7.69	6.81						
[illegible]	[illegible] E	[illegible],820	[illegible]	.16 S	233.0	1	.11	-.13	-.18	.64	.16	-.28	.36	.31	.34	.50	.334	12.0	-13.5	.93	.82	1.52	2.60	.078	50.1
						2	-.14	.11	.18	-.56	.15	.33	.31	-.36	-.38	-.39	.351	-49.1	8.98						
						3	.11	-.13	.14	.56	-.16	-.29	.40	.34	.35	.41	.317	-27.2	-10.3						
	[illegible]	[illegible]	[illegible]	.20 [illegible]	233.5	1	.086	-.080	.13	.29	.087	.13	.18	.16	.20	.32	.260	8.72	-12.8	.66	.71	1.09	1.87	.088	52.8
						2	.076	.075	-.12	.10	-.10	-.11	.21	.20	-.187	-.35	-.243	-43.6	7.69						
						3	.081	.075	.12	-.11	-.057	.17	-.18	-.17	.271	.41	.256	-25.9	-11.5						
	[illegible]	[illegible]	[illegible]	.16 S	232.5	1	.030	.030	.033	-.13	.033	.010	.035	-.052	.051	-.089	-.069	7.09	-7.70	.52	.54	.62	.93	.092	62.0
						2	-.030	-.030	.038	-.13	-.038	.040	-.035	-.043	.068	.089	.074	-27.2	5.13						
						3	.040	.030	-.033	-.15	-.033	-.040	.035	-.052	.047	-.071	.078	7.63	-7.69						
	[illegible] A	[illegible],600	[illegible]		232.8	1	-.051	-.055	.083	-.23	.051	.016	-.041	-.061	-.093	.12	-.113	-35.4	5.13	.49	.56	.92	1.14	.091	--
						2	.056	.050	-.083	.24	-.051	-.075	-.044	.061	.10	-.13	.156	8.72	-11.5						
						3	-.071	.055	.092	-.31	-.054	-.057	-.053	-.065	.102	.13	-.117	8.18	9.62						
	[illegible]	[illegible]	[illegible]	.23 S	231.3	1	.091	-.080	-.096	.49	-.11	.45	.23	.30	-.36	.39	.325	9.81	6.41	.63	.67	1.05	2.10	.078	55.0
						2	-.091	.090	.10	.14	-.13	-.33	-.21	-.28	-.44	-.44	.360	-32.7	-7.69						
						3	.066	-.090	.083	.51	-.14	.44	.26	.28	.34	-.47	.394	10.4	7.69						
	[illegible]	[illegible]	[illegible]	[illegible] N	225.3	1	.071	-.100	.17	-.42	-.14	-.11	.15	.20	.16	.27	.473	9.27	-8.98	.77	.71	1.09	2.41	.082	50.5
						2	-.071	.105	-.17	.65	.13	.15	-.17	.17	.20	-.24	-.321	-34.1	-8.34						
						3	.071	-.100	.16	-.56	-.17	-.14	.14	-.18	-.16	.30	.325	-19.1	7.69						
	[illegible]	[illegible]	[illegible]	.21 N	233.0	1	-.071	-.090	.092	.25	.065	.069	.070	.069	.15	.34	-.213	8.72	-10.3	.69	.69	.78	1.47	.075	54.4
						2	-.091	.100	-.12	-.26	-.076	-.092	-.061	.069	-.18	-.22	.239	-31.3	6.41						
						3	.076	-.095	.13	.23	-.070	-.080	.061	.071	.17	.28	.191	7.63	-11.5						
	[illegible]	[illegible],720	[illegible]	.31 N	237.0	1	.056	.055	-.050	.22	-.035	.037	-.053	-.061	.14	.18	.152	8.72	-11.5	.61	.71	1.05	1.43	.083	--
						2	.061	-.060	.046	-.21	-.049	-.057	-.044	-.056	.17	.22	-.139	-35.4	7.69						
						3	-.051	.070	-.042	.19	.060	.063	.044	.043	.16	-.15	.156	-21.8	-12.8						

ORIGINAL PAGE IS OF POOR QUALITY

Table III (Concluded)

Date	Mission No.	Altitude msl ft.	Mach No.	Lateral Dist. Naut. mi.	Mag. Hdg. deg.	Reading Point	Peak Amplitude — Accelerometer Channels g's											Strain Gage μ, in./in.		Δp_I lb/ft^2			Δp_O Avg. lb/ft^2	Δt Avg. sec.	Vert. Wave Angle deg.
							301	302	303	304	305	306	307	308	309	310	311	312	313	405	407	409			
6-23-66	17 B	21,600	1.40	.46 S	227.5	1	.068	-.091	-.10	-.30	.054	-.088	-.047	.056	.14	.19	.510	8.72	5.77	.71	.61	1.07	1.58	.076	10.
						2	-.083	.080	.10	-.29	-.060	.12	-.047	-.065	-.16	-.16	-.520	-70.8	-12.3						
						3	.073	-.086	.10	.30	-.065	-.088	-.047	-.078	.16	-.16	.542	-46.3	-13.1						
	22 A	29,260	1.40	0	232.0	1	-.068	-.060	-.11	.33	.054	-.11	-.10	-.091	.16	.24	.531	9.27	-11.6	.61	.64	1.03	1.61	.082	51.
						2	.078	.075	.13	-.26	-.054	.083	.12	.087	-.15	-.22	-.466	-70.8	9.62						
						3	-.083	-.070	-.11	.25	-.087	-.083	.098	-.11	.15	.26	.510	8.72	-10.2						
	31 B	21,260	1.39	0	232.0	1	.088	-.10	.12	-.33	-.087	.14	.29	.12	.19	.31	-.585	8.72	-13.1	.71	.59	1.15	2.18	.076	49.6
						2	-.11	.080	-.15	-.40	.076	.13	.27	-.16	-.21	-.23	.607	-70.8	7.69						
						3	.098	-.10	.15	.32	-.081	-.14	-.29	-.13	.18	.25	-.607	-40.9	-12.3						
	33 B	29,840	1.49	.10 S	229.8	1	.11	.091	-.14	.42	.065	.072	-.077	-.074	.20	.35	-.629	9.81	-12.3	.71	.62	1.17	1.82	.084	49.7
						2	-.10	-.11	.18	-.34	-.070	-.10	-.073	.10	-.17	-.29	.629	-79.0	9.62						
						3	.083	.10	-.14	-.27	.070	-.10	-.081	-.096	.26	.41	.651	8.18	10.3						
	20 A	21,520	1.37	.19 N	233.2	1	-.096	-.12	-.18	-.40	.081	.12	-.21	.21	-.25	.33	-.716	9.81	-15.3	.77	.81	1.36	1.88	.079	55.2
						2	.13	.091	.21	-.48	.11	.10	.21	.19	.26	-.32	.856	-76.3	-11.6						
						3	-.11	-.11	-.17	.40	.087	-.12	-.21	-.21	.32	.33	.813	9.81	10.3						
	36 A	20,860	1.39	.37 S	230.2	1	.093	-.11	-.15	.43	-.14	-.15	.18	.16	.27	.41	.781	8.72	7.05	.71	.62	.99	2.09	.079	53.3
						2	-.11	.091	.17	.53	-.12	-.18	-.17	.16	-.23	.32	-.835	-62.7	-10.9						
						3	.14	-.13	-.15	-.44	-.12	-.17	.17	-.16	-.33	-.36	1.15	6.00	-11.6						
	7 X	29,640	1.55	.29 S	257.6	1	-.078	-.060	.073	-.13	-.054	-.061	-.043	.061	.13	.15	-.412	10.4	-18.9	.77	.72	.86	2.03	.081	--
						2	.083	.050	-.081	-.14	.054	.061	-.038	.065	-.090	-.091	.401	-122.6	11.5						
						3	.078	.050	.093	.18	.060	-.055	-.038	-.069	.12	.10	.564	11.4	13.5						

Alt. Mach No. at 12 Naut. mi. E

Table IV

SONIC BOOM INDUCED ACCELERATION AND STRAIN RESPONSES OF TEST STRUCTURE NO. 2 FOR A RANGE OF XB-70 FLIGHT CONDITIONS.

Date	Flight Test No.	Altitude msl ft.	Mach No.	Lateral Dist. Naut. mi	Mag. Hdg. deg.	Reading Point	Peak Amplitude													ΔP_1 lb/ft^2			ΔP_0 Avg. lb/ft^2	Δt Avg. sec.	Vert. Wave Angle deg.
							Accelerometer Channels g's											Strain Gage μ, in./in.							
							301	302	303	304	305	306	307	308	309	310	311	312	313	405	407	409			
6-4-66	13	52 920	1.81	2.5 N	2430	1	-.173	.115	.146	.336	.104	-.092	-.168	.149	.195	.337	.481	23.2	10.2	1.16	1.87	0.86	2.39	.250	42.5
						2	.207	-.156	-.143	-.311	-.090	.138	.212	-.197	-.225	-.266	--	-31.3	--						
						3	-.143	-.130	.117	.235	.102	- 144	-.155	-.140	.161	.199	.537	27.9	--						
6-6-66	22	72,000	2.83	4.10 N	262.0	1	- 051	.090	.071	182	-.065	.066	-.115	-.091	.123	-.170	.271	12.2	5.22	1.00	1.05	1.11	1.63	.315	--
						2	.096	.095	-.076	-.203	.070	.061	.085	.070	-.144	.228	.304	-16.6	--						
						3	-.071	.085	.076	-.148	-.076	.061	-.085	-.074	.131	-.183	.271	--	--						
6-8-66	1	21,850	1.38	5.02 S	246.0	1	.142	-.100	.080	.309	-.054	.063	049	.066	.068	-.075	-.542	16.0	9.31	1.25	1.95	.94	2.21	.233	61.8
						2	-.159	090	-.084	.368	.087	-.080	-.053	- 052	-.093	.080	.477	-25.2	6.32						
						3	.152	-.065	-.084	.296	- 098	.080	-.053	.048	-.085	-.089	-.607	29.1	--						

Table V

ENGINE NOISE INDUCED ACCELERATION AND STRAIN RESPONSES OF TEST STRUCTURE NO. 2 FOR A RANGE OF KC-135 FLIGHT CONDITIONS

Date	Mission No.	Altitude msl ft.	EPR	Velocity Kts.	Maximum Peak Amplitude													Noise Levels, dB			
					Accelerometer Channels g's											Strain Gage μ, in./in.		RMS Out-side	Peak Inside		
					301	302	303	304	305	306	307	308	309	310	311	312	313	205	401	402	403
6-6-66	39B	10,300	1.6	310	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	70B	5,400	1.5	260	--	--	--	.11	--	--	--	.013	--	.013	--	--	--	84.8	123.6	122.0	123.5
	40B	5,400	1.5	280	--	--	--	.013	.016	.011	.019	.013	.013	.016	.027	--	.57	84.8	123.6	124.9	121.9
	71B	3,500	1.5	290	--	--	--	.036	.022	.017	.030	.026	.017	.022	.049	--	.45	102.9	127.1	127.1	127.1
	41B	3,300	1.5	238	--	--	--	.051	.027	.022	.034	.039	.017	.022	.043	--	.80	101.1	127.1	128.0	127.9
	72B	2,800	1.5	290	--	--	--	.085	.041	.044	.059	.054	.032	.042	.11	--	.80	108.9	128.0	128.9	127.9
	43B	14,300	2.35	325	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	74B	8,300	2.35	328	--	--	--	.025	.019	.014	.025	.017	.021	.018	.043	--	.80	105.7	126.1	123.6	126.0
	44B	8,300	2.35	330	--	--	--	.12	.057	.055	.081	.100	.053	.071	.13	--	.90	111.1	131.0	132.1	133.0
	75B	3,300	2.35	213	--	--	--	--	--	--	--	--	--	--	--	--	--	--	141.5	145.2	148.1
	42B	2,800	2.35	213	--	--	--	--	--	--	--	--	--	--	--	--	--	--	149.6	147.9	154.1
	73B	2,520	2.35	213	--	--	--	.070	.046	.030	.530	.054	.030	.060	.076	--	.80	106.9	128.9	128.9	127.9
6-7-66	76B	4,360	2.35	190	.007	--	.008	.20	.054	.10	.092	.18	.075	.012	.16	1.65	1.11	106.9	--	--	--
	45A	3,000	2.35	195	.015	.018	.017	.42	.15	.21	.20	.39	.11	.29	.48	1.65	1.11	114.8	--	--	--
	77A	3,000	2.35	190	.022	.030	.021	.41	.15	.21	.22	.34	.15	.35	.37	1.32	2.00	115.1	--	--	--
	46A	2,620	2.35	190	.015	.030	.021	.50	.19	.14	.29	.22	.13	.20	.22	1.65	1.00	116.2	--	--	--
	48B	3,000	2.35	205	.015	.025	.017	.45	.16	.20	.020	.37	.077	.21	.34	--	1.33	114.8	--	--	--
	79B	2,620	2.35	195	.039	--	.044	--	--	--	--	--	--	--	--	--	3.11	--	--	--	--
	49B	4,300	2.35	195	.024	--	.013	.12	.054	.058	.11	.15	.066	.060	.19	--	1.11	110.4	--	--	--
	80B	3,000	2.35	190	.029	.038	.033	.41	.20	.16	.24	.37	.18	.19	.40	--	1.56	115.6	--	--	--
	50B	8,300	2.35	200	.020	--	.002	.013	.003	.017	.004	.025	.004	.013	.005	--	.67	--	--	--	--
	81B	4,300	2.35	195	.007	--	.008	.12	.049	.066	.12	.11	.042	.11	.097	--	1.00	106.2	--	--	--
6-8-66	43B	14,300	2.35	182	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	75B	8,300	2.35	168	--	--	--	.013	--	--	--	.013	--	.018	--	--	--	101.0	122.1	121.9	123.2
	42B	2,800	1.5	160	--	--	--	.10	.043	.034	.10	.088	.051	.073	.098	--	.67	108.5	133.2	131.5	134.0
	73B	2,552	1.5	175	.020	.023	.019	.19	.10	.11	.19	.25	.14	.16	.26	--	1.33	114.6	138.8	137.2	139.2
	41B	5,300	1.5	157	--	--	--	.015	--	--	--	.013	--	.063	--	--	--	97.7	122.1	124.9	121.6
	72B	2,800	1.5	174	--	--	--	.068	.049	.040	.077	.071	.047	.058	.098	--	.89	107.8	131.1	130.2	132.2
	57RA	3,300	1.5	166	--	--	--	.051	.019	.023	.075	.033	.017	.027	.054	--	.69	100.4	129.0	130.9	128.4
	80RA	2,800	1.5	169	--	--	--	.078	.033	.040	.080	.077	.059	.066	.098	--	.89	106.7	130.4	130.2	131.6
	56RA	5,300	1.5	155	--	--	--	--	--	--	--	--	--	--	--	--	--	97.7	122.1	124.9	119.6
	81RA	3,300	1.5	166	--	--	--	.038	.019	.017	.035	.035	.025	.031	.054	--	.56	102.9	126.2	[illegible]	126.7
	55RA	10,300	1.5	146	--	--	--	--	--	--	.018	--	.013	--	.033	--	.44	92.5	123.7	[illegible]	123.2
	86RA	5,300	1.5	176	--	--	--	.013	.014	.023	.018	.040	.013	.009	.027	--	--	96.9	122.1	123.5	121.6

Table V (Concluded)

Date	Mission No.	Altitude msl ft.	EPR	Velocity Kts.	Maximum Peak Amplitude													Noise Levels, dB			
					Accelerometer Channels g's											Strain Gage μ, in./in.		RMS Out-side	Peak Inside		
					301	302	303	304	305	306	307	308	309	310	311	312	313	205	401	402	403
6-9-66	86A	5,300	1.5	171	--	--	--	.068	.025	.026	.021	.017	.017	.022	--	--	.44	94.1	--	125.1	--
	55A	10,300	1.5	225	--	--	--	.027	.028	--	.042	.013	.021	.013	.032	--	.65	94.1	--	123.8	--
	87A	3,300	1.5	190	--	--	--	.040	.028	.023	.030	.039	.030	.031	.053	--	.65	92.8	121.8	126.3	--
	56A	5,300	1.5	173	--	--	--	.017	.017	--	.013	.017	.013	.013	.032	--	.87	100.1	120.2	123.8	--
	80A	2,800	1.5	173	.001	.010	.013	.085	.028	.040	.047	.083	.038	.076	.085	--	.65	98.8	127.8	128.2	96.2
	57A	3,300	1.5	170	.044	--	.050	.042	.034	.017	.064	.022	.064	.027	.096	--	.87	96.3	120.2	127.3	--
	72	2,300	1.5	172	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	41SB	5,300	1.5	152	--	--	--	.021	.017	.017	.013	.017	.013	.013	.032	--	.65	92.8	118.3	126.3	--
	73SB	2,550	1.5	178	.015	.024	.017	.18	.073	.092	.14	.14	.076	.13	.21	--	1.31	103.2	130.9	130.5	92.6
	42SB	2,800	1.5	158	.015	.020	.017	.097	.051	.046	.072	.087	.059	.067	.12	--	.76	105.2	127.8	130.5	92.6
	75SB	8,300	2.35	162	--	--	--	.013	.011	--	.013	.013	.013	.013	.021	--	.44	96.3	120.2	123.8	--
	43SB	14,300	2.35	135	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	42SB	2,800	1.5	162	.015	--	.029	.085	.045	.032	.055	.044	.047	.045	.12	--	.87	99.5	127.1	129.8	--
	46SB	3,300	2.35	172	.020	.034	.025	.49	.25	.22	.29	.48	.19	.28	.53	--	2.18	117.8	138.3	145.5	105.2
	72SB	2,800	1.5	164	--	.015	.017	.085	.051	.046	.068	.066	.038	.051	.096	--	.65	102.8	126.3	128.2	96.2
6-20-66	48B	5,280	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	79B	3,300	1.5	190	--	--	--	.035	.033	.017	.047	.017	.025	.018	.054	--	--	122.2	127.2	125.1	102.1
	53B	4,300	2.35	200	--	.015	.002	.14	.070	.029	.11	.11	.068	.075	.14	--	--	131.0	130.3	127.2	104.5
	84B	3,000	2.30	195	.020	.031	.004	.39	.21	.21	.33	.34	.26	.24	.41	--	--	139.2	140.4	143.3	110.6
	54B	3,000	2.30	195	--	.036	.005	.43	.26	.21	.34	.37	.20	.28	.45	1.92	--	137.8	141.2	142.6	110.6
	59A	12,000	2.35	180	--	--	--	.017	.011	.011	.013	.013	.017	.013	--	--	--	115.6	123.7	125.1	--
	98A	6,000	2.35	200	--	--	--	.022	.033	.023	.059	.039	.038	.018	.087	--	--	121.0	127.2	126.2	100.5
	60A	6,000	2.35	175	--	--	--	.061	.038	.034	.055	070	.042	.049	.087	--	--	121.0	129.7	129.7	100.5
	90A	6,000	2.35	175	--	--	--	.035	.038	.029	.047	.044	.051	.035	.043	--	--	129.8	129.7	131.6	100.5
	85B	2,600	2.30	185	.030	.071	.009	--	--	--	--	--	--	--	.71	2.56	2.73	--	150.0	151.7	118.5
	93A	2,600	2.30	195	.040	.056	.010	--	--	--	--	--	--	--	--	2.56	1.36	--	151.7	151.3	119.8
6-21-66	89A	2,500	1.5	220	.010	.023	.031	.17	.15	.18	.25	.59	.15	.18	.32	--	1.36	117.0	139.3	129.1	108.0
	58A	2,800	1.5	205	.010	--	.002	--	.054	.080	.086	.056	.036	.040	.081	7.49	1.02	110.9	132.3	129.1	102.0
	99A	4,300	2.35	194	.008	--	.002	.15	.081	.063	.12	.12	.081	.080	.16	--	1.36	114.6	134.7	129.8	104.5
	66A	2,800	1.5	210	.015	.015	.002	.11	.043	.051	.088	.091	.053	.066	.14	--	1.36	111.5	131.1	132.3	102.0
	100A	3,000	2.35	200	.023	.025	.005	.47	.22	.20	.34	.49	.22	.24	.58	--	1.70	121.0	141.7	138.6	108.0
	68A	8,300	2.35	175	.008	--	.002	--	.008	--	.009	.013	.009	.013	.022	--	1.36	103.0	123.8	--	--
	69A	4,300	2.35	195	--	.010	--	.12	.054	.046	.071	.10	.030	.075	.049	--	--	112.5	129.1	126.3	102.0
	48B	5,300	1.5	198	--	--	--	.021	.008	.011	.011	.013	.011	.009	.022	--	1.02	99.4	123.8	125.1	--
	40B	5,300	1.5	197	--	--	--	--	.011	--	.011	.013	.009	--	.022	--	1.36	103.0	123.8	123.8	--
	60A	8,300	2.35	176	--	--	--	.032	.016	.014	.020	.022	.015	.022	.033	--	--	101.4	123.8	123.8	--
	61A	4,300	2.35	200	--	--	--	.11	.054	.051	.071	.11	.032	.058	.076	--	--	112.5	132.8	131.7	104.5
	101A	2,600	2.35	175	.043	.055	.010	--	--	--	--	--	--	--	--	2.73	2.38	--	151.0	150.4	119.1
	[illegible]5B	2,600	2.35	180	.018	.050	.009	--	--	--	--	--	--	--	.87	2.73	1.02	128.5	149.1	147.2	117.3

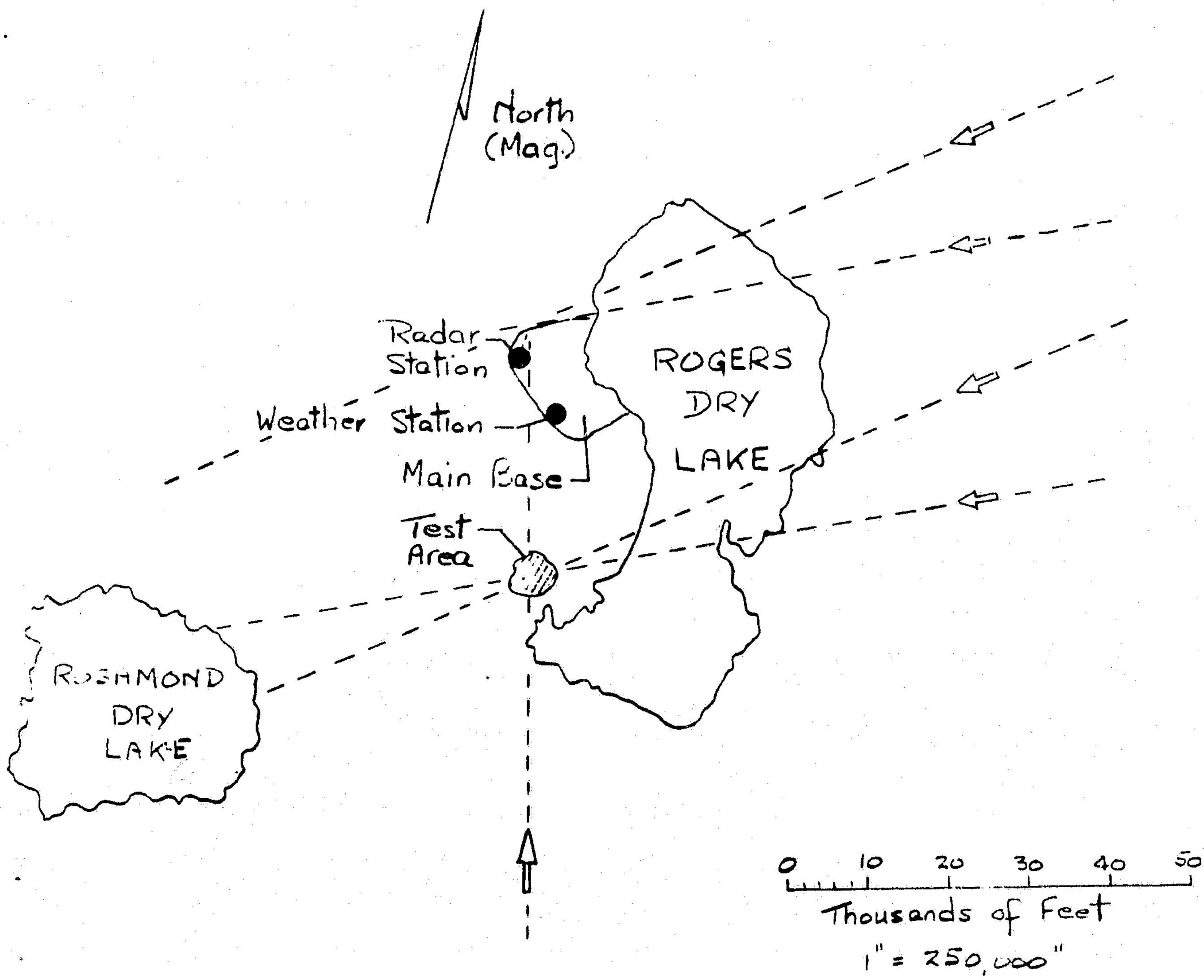
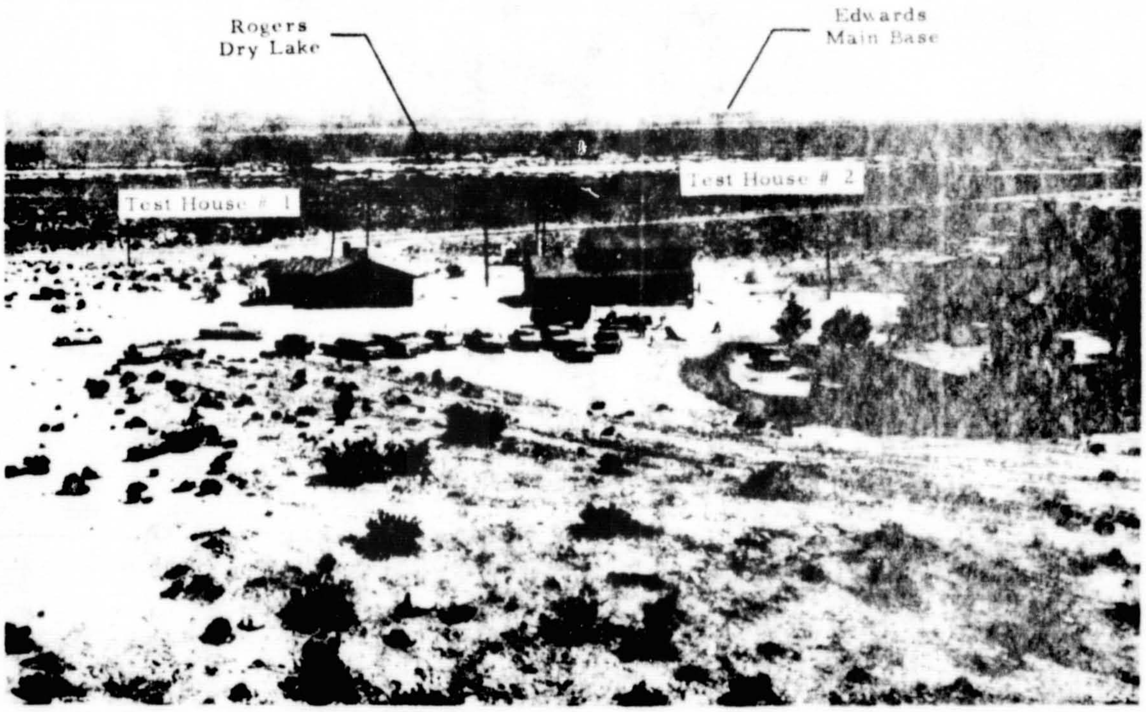


Figure 1. Arrangement of facilities and equipment including test area and aircraft flight tracks (Arrows indicate various flight tracks used for tests.).

(a) View looking East



(b) View looking North

Figure 2. Photographs of test area showing type of terrain and test structures.

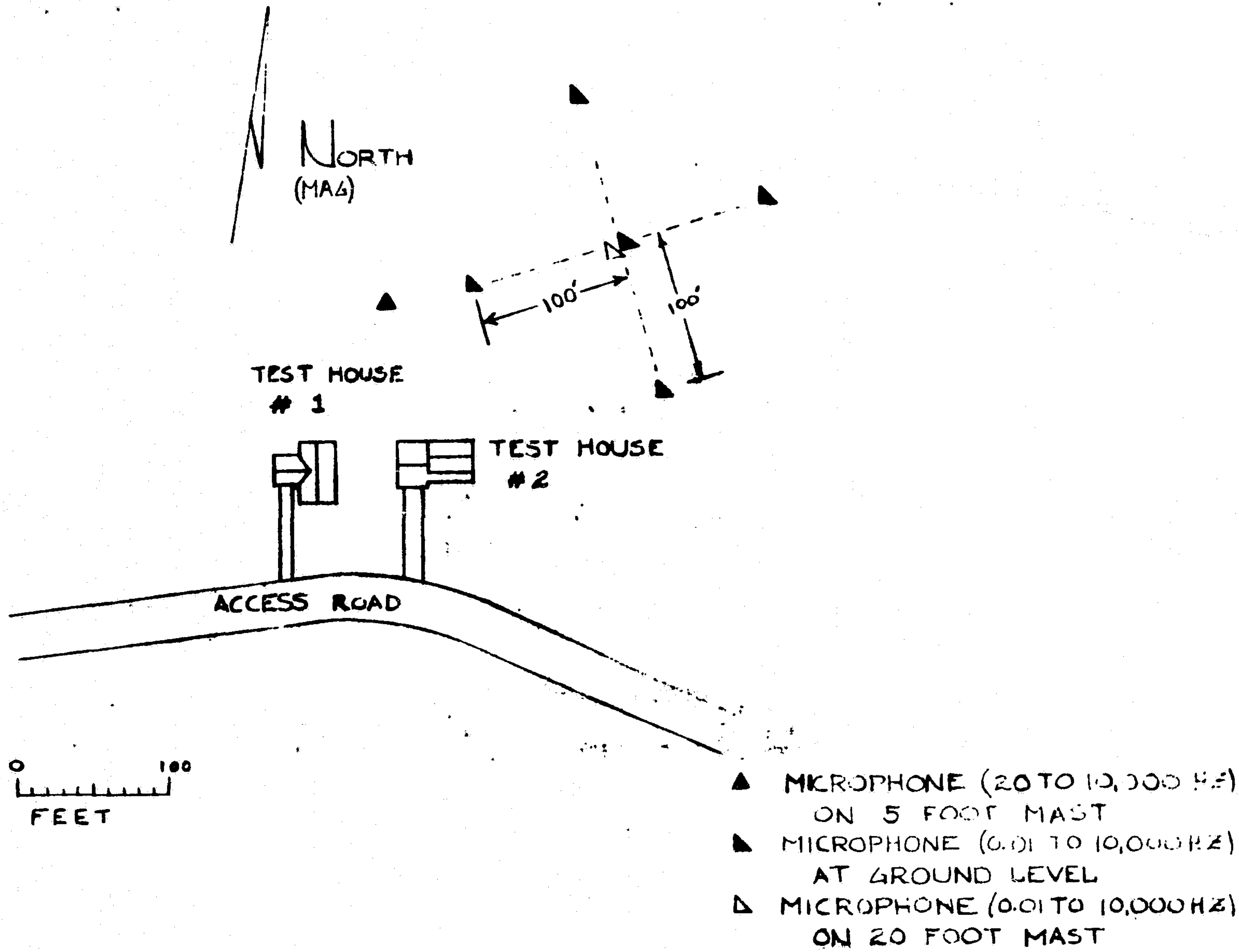


Figure 3. Planview sketch of test area showing relative locations of house structures and microphone arrays.

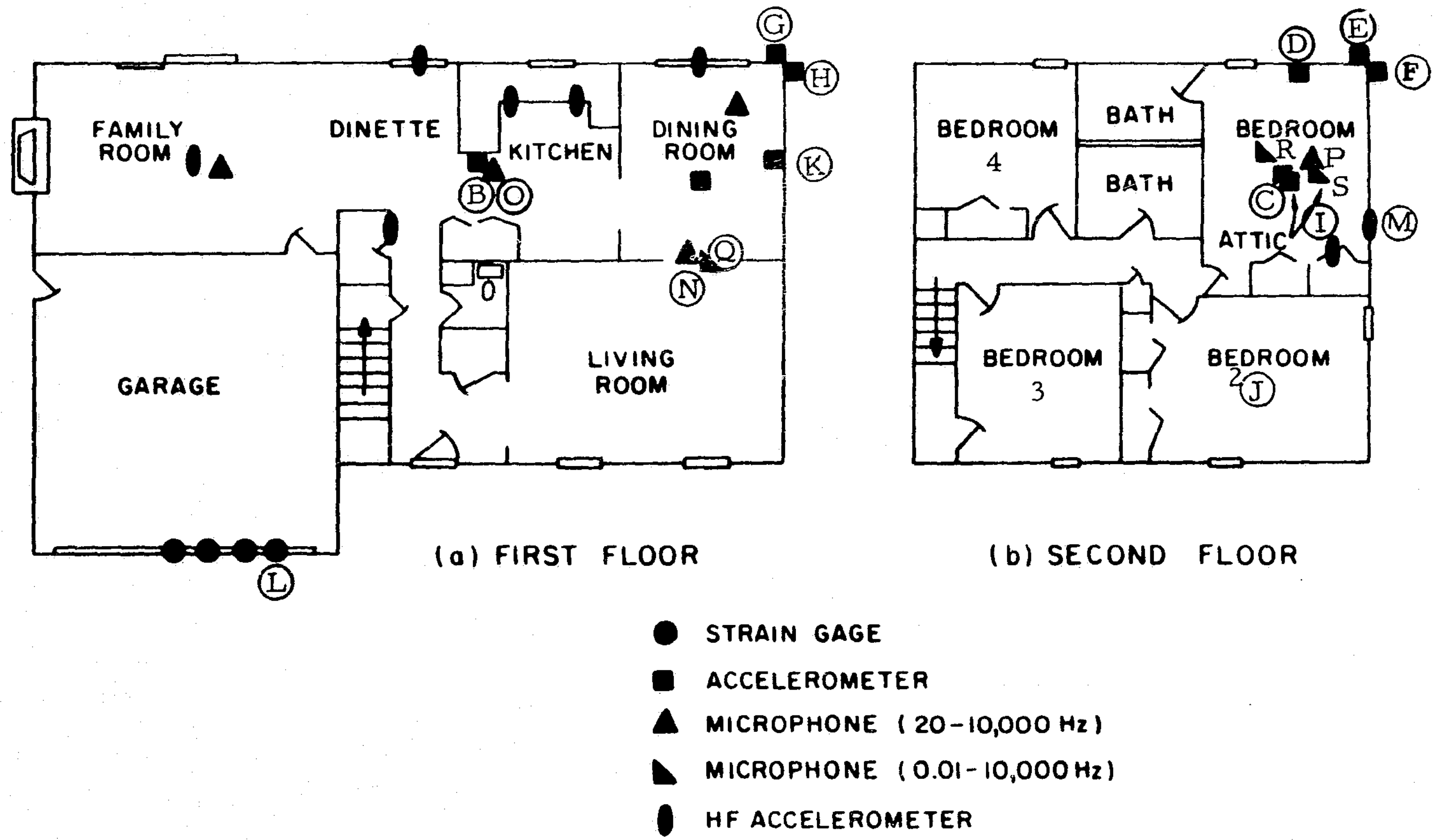
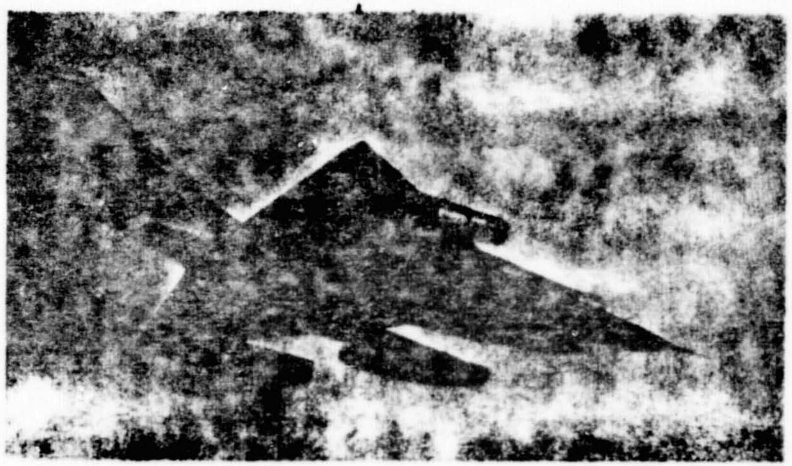
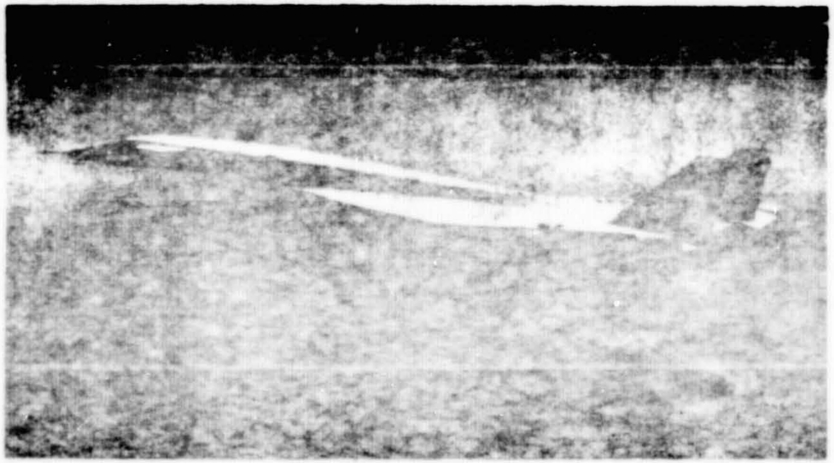


Figure 4. - Sketches of floor plans for test house No. 2 showing transducer locations.

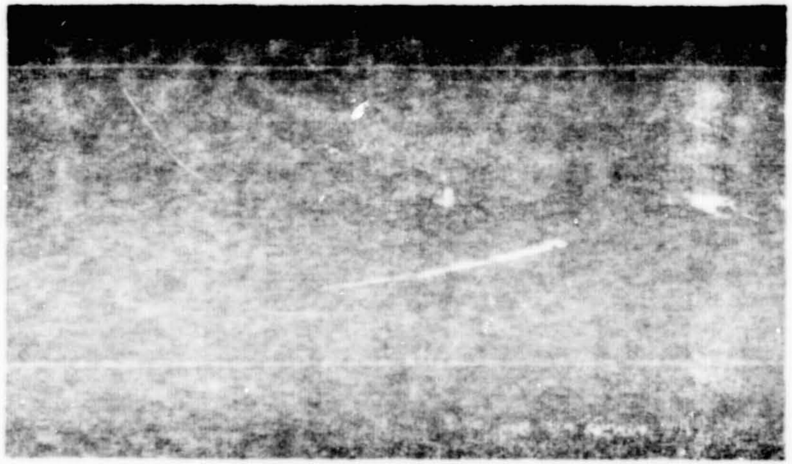
(a) F-104



(b) B-58



(c) XB-70



(d) KC-135

FIG. 5 PHOTOGRAPHS OF AIRCRAFT USED IN MAJORITY OF THE TESTS

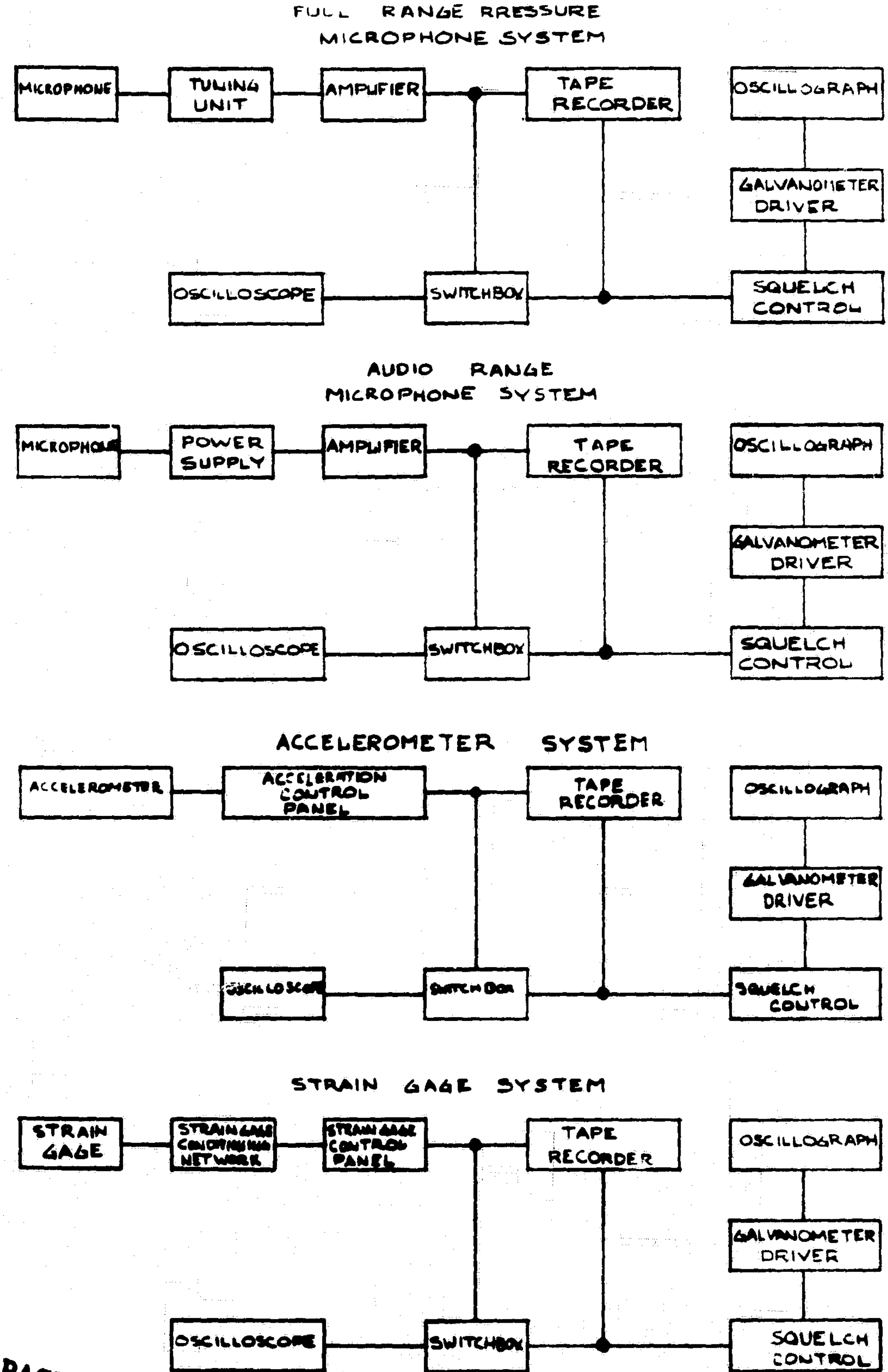
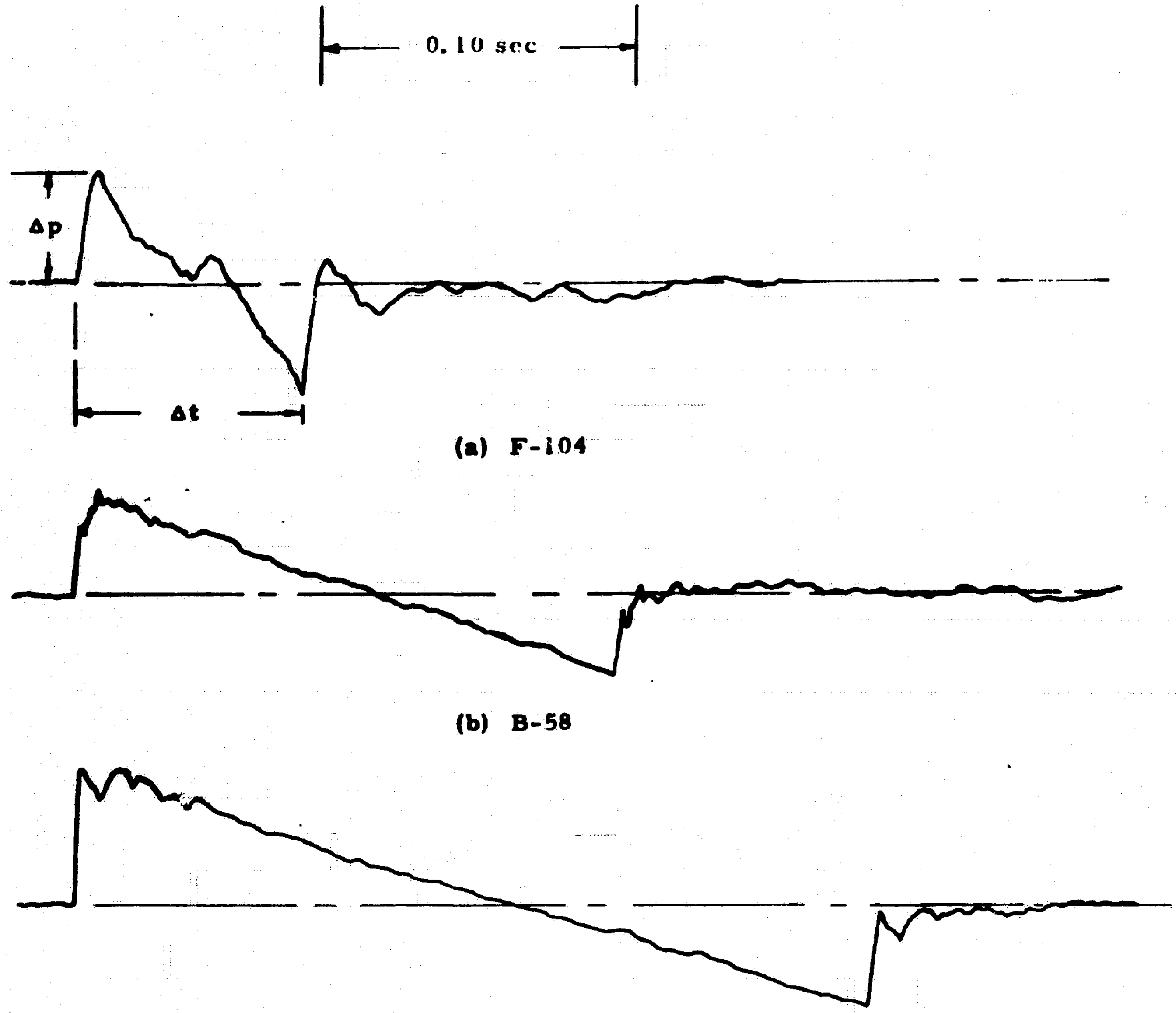


Figure 6. Block diagrams of measurement systems.



(c) XB-70

Figure 7. - Tracings of sonic boom signatures recorded during flights of the three different aircraft for which structural response data were obtained. (Δp and Δt values are listed in Tables II-IV for each data flight.)

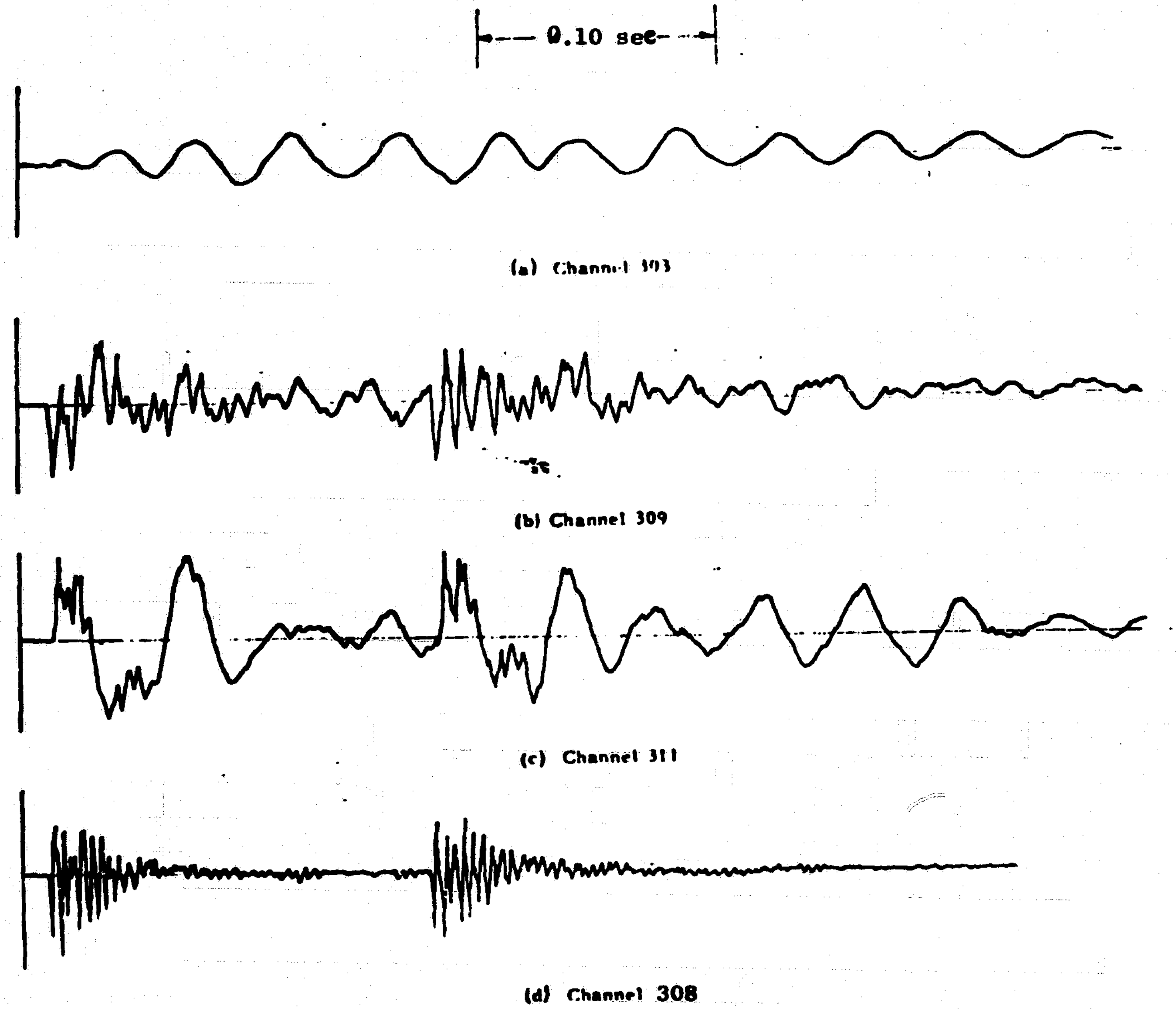
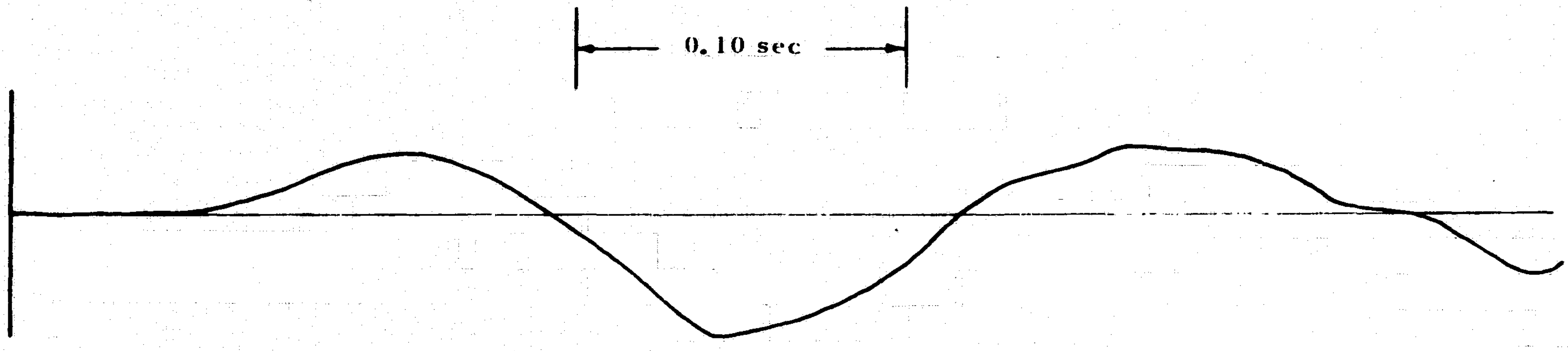
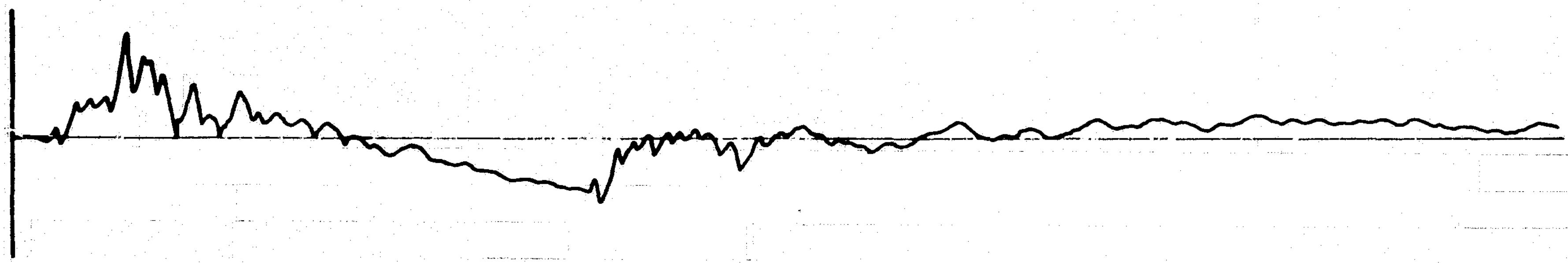


FIG. 8 TRACINGS OF RECORDS OF B-58 SONIC-BOOM INDUCED ACCELERATION RESPONSES FOR FOUR TRANSDUCER LOCATIONS AS DEFINED IN TABLE I FOR MISSION NO. 80 RB (Acceleration amplitudes are listed for each data flight).

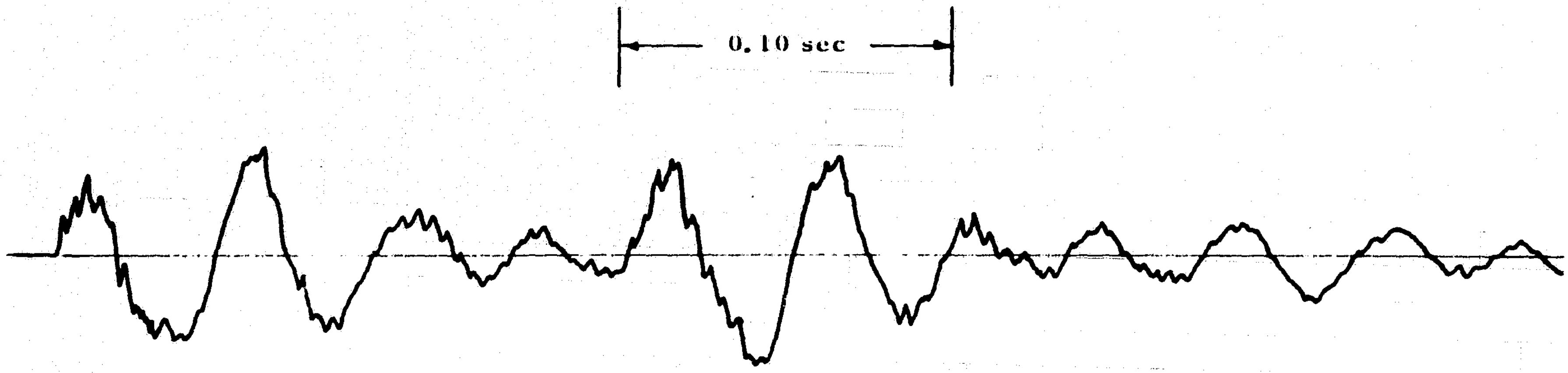


(a) Plate glass window (7' x 12')

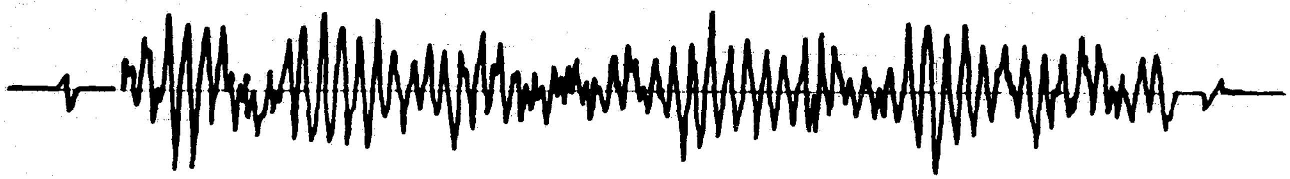


(b) Window pane (10" x 12")

Figure 9. - Tracings of records of B-58 (Mission No. 80 RB) sonic-boom induced strain responses for two windows of different sizes. (Strain amplitudes for each data flight are listed in Tables II-IV.)

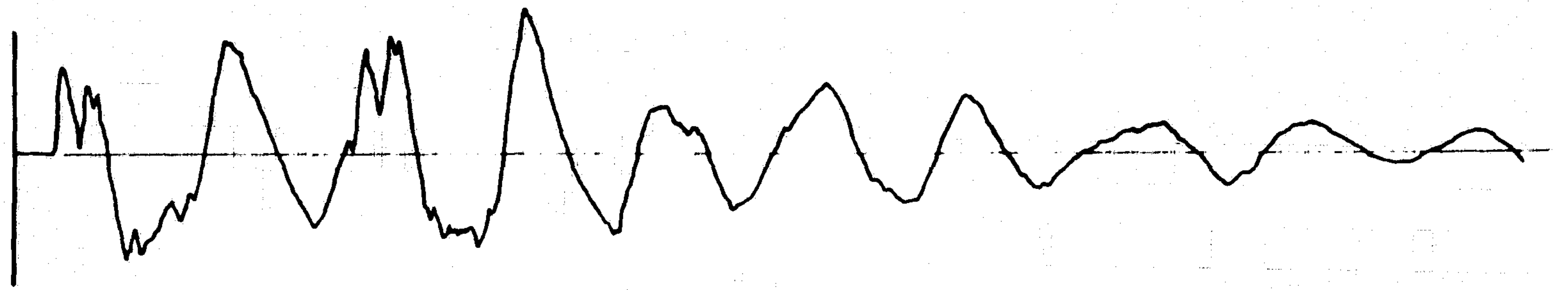


(a) B-58 sonic boom

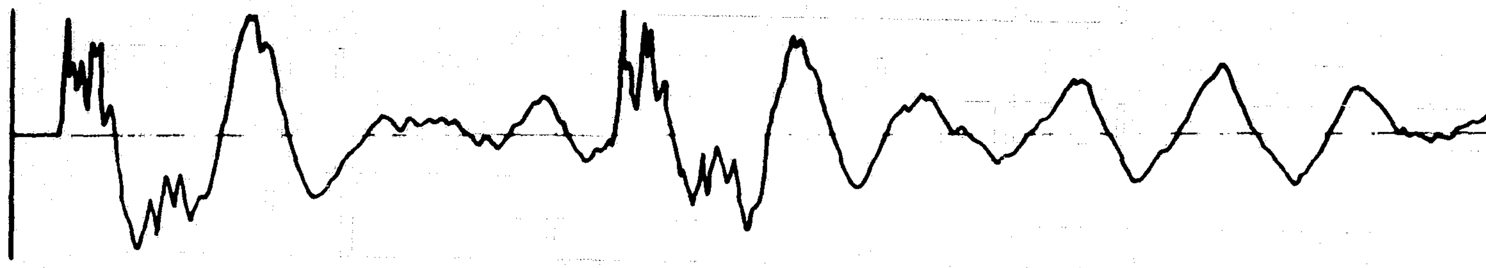


(b) KC-135 engine noise

Figure 10. - Comparison of tracings of records of acceleration responses induced by a sonic boom and by engine noise. Data are for Mission Numbers 75 A and 75 F of Tables II and V.



(a) F-104, Mission No. 14, Table III



(b) B-58, Mission No. 80 RB, Table II

(c) XB-70, Flight No. 1, Table IV

Figure 11. - Tracings of time histories of acceleration responses of the dining room east wall (Channel 311) due to excitation by sonic booms from three different aircraft.

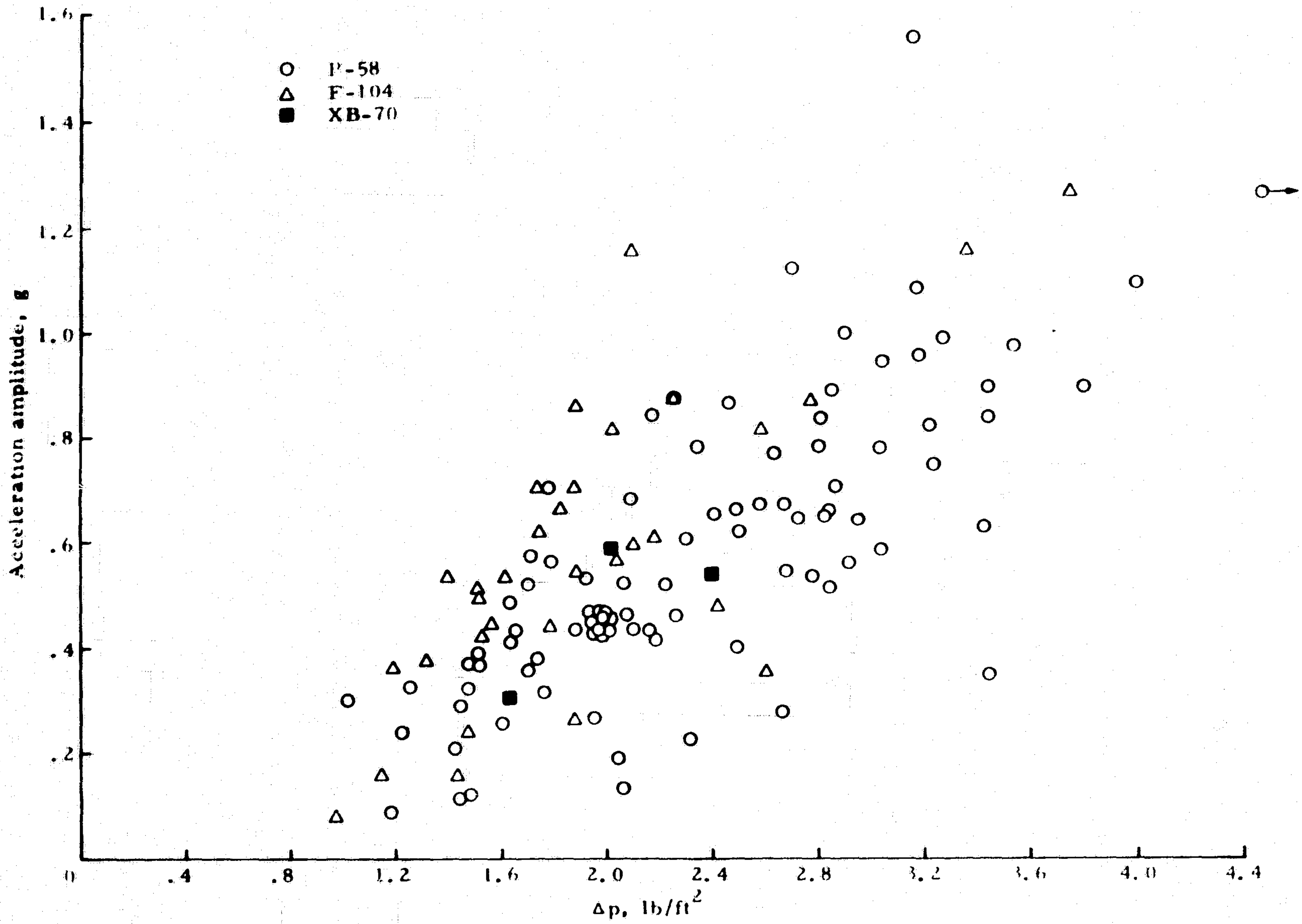


Figure 12. - Peak acceleration amplitudes of the dining room east wall as a function of sonic boom overpressures from three different aircraft. Data are from Channel 311 as listed in Tables II, III and IV.

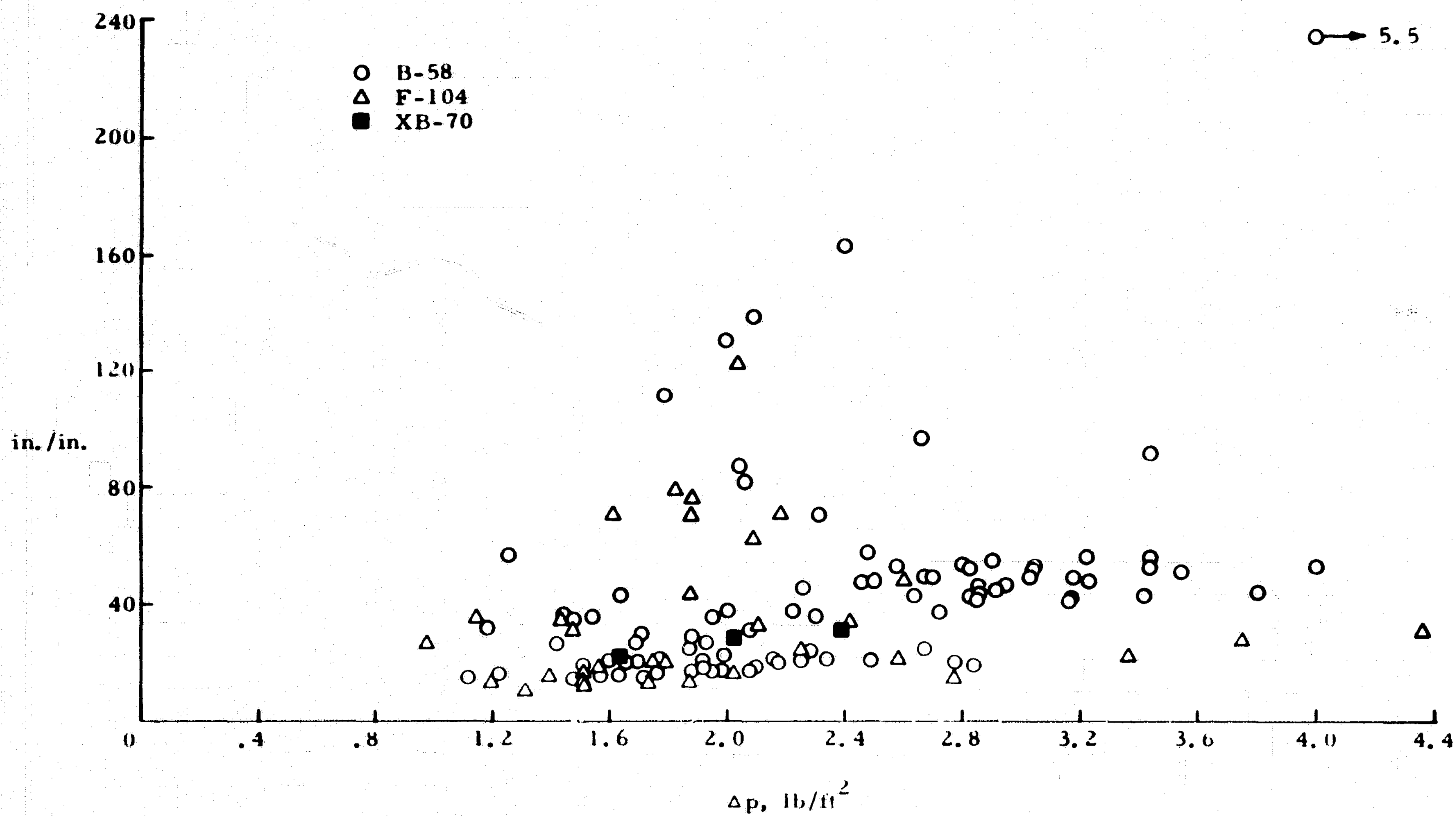


Figure 13. - Peak strain amplitudes of a large plate glass window as a function of sonic boom overpressures from three different aircraft. Data are from Channel 312 as listed in Tables II, III and IV.

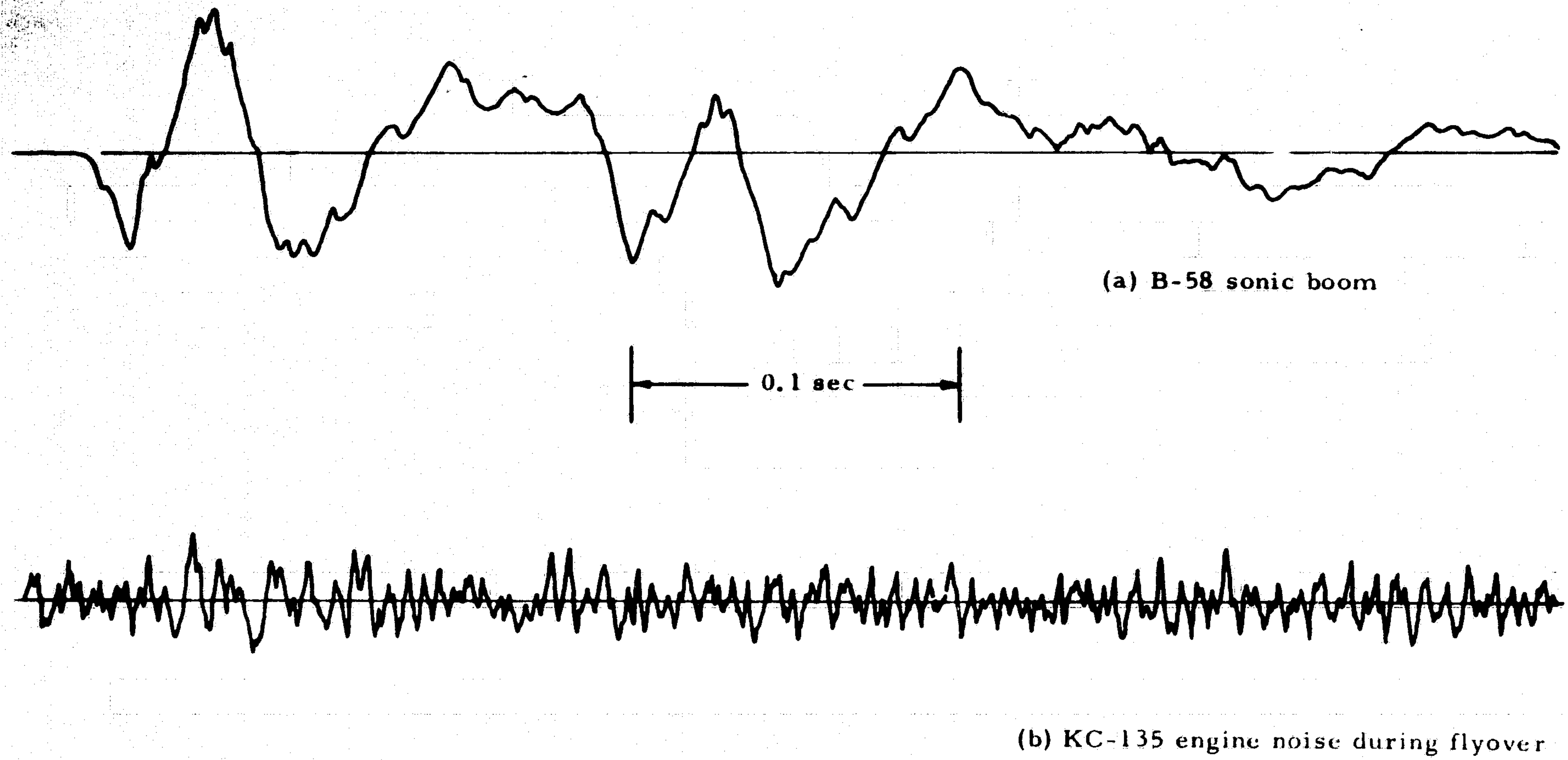


Figure 14. - Measured noise exposure time histories in the dining room area of test structure No. 2 (see fig. 4) for both sonic boom and engine noise exposures.